

IMPLICIT AND EXPLICIT ATTITUDES TOWARDS
OLDER WORKERS: THEIR PREDICTIVE UTILITY
AND THE ROLE OF ATTITUDE MALLEABILITY

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Abstract

Due to the ageing population, an increasing number of older workers form the labour force. Unfortunately discriminatory practices against older workers are well documented and the antecedents of such discrimination are assumed to be negative attitudes towards older workers. No previous research has investigated implicit attitudes towards older workers or their behavioural consequences. Accordingly, the present research aimed to investigate both implicit and explicit attitudes towards older workers, and their predictive utility in an employment-related context. In addition, attitude malleability and the role it may play in the attitude-behaviour relationship was investigated. This thesis reports findings from 5 studies, a pilot study and 4 main studies. The pilot study determined that the Implicit Association Test (IAT; A.G. Greenwald, D. E. McGhee & J. L. K. Schwartz, 1998) was to be used in the main studies. The 4 main studies investigated implicit attitudes, and the malleability of such attitudes towards older, relative to younger, workers. The malleability of attitudes was investigated with a mental imagery intervention where the experimental group participants were asked to imagine and describe respected and valued older workers in their surroundings. The control group participants were asked to imagine holiday destinations they would like to visit. In general, it was expected that negative implicit and explicit attitudes would be found towards older workers but that such bias could be alleviated with a mental imagery intervention. In all studies, negative implicit attitudes against older workers were found and such attitudes were relatively uninfluenced by the mental imagery manipulation. Three studies included explicit measures of attitudes. Although some variation was found between the studies and the measures used, overall positive attitudes towards older and younger workers were found. The mental imagery manipulation was also found to influence the explicit

attitudes to a greater degree than implicit attitudes. The final study investigated the relationship between attitudes and behaviour. Specifically, both implicit and explicit attitudes' relationships with spontaneous and controlled-type behaviours towards an older and a younger target were examined. Overall, some evidence for youth-bias in the participants' behaviour was found, as well as evidence for the relationship between explicit attitudes and spontaneous behaviours. Implicit attitudes were largely unrelated to behaviour. In general, the mental imagery intervention did not impact the attitude-behaviour relationship. Implications for older workers are discussed, as well as educational methods for reducing discrimination older workers face in employment.

Introduction

Research rationale and research overview

The present research applied a dual approach of attitudes to the domain of older workers. Specifically, both implicit and explicit attitudes towards older workers were investigated. The research also investigated the relationship between attitudes and behaviour, and the role that attitude malleability may play in the attitude-behaviour relationship. Although research has previously investigated explicit attitudes towards older workers, research focusing on implicit attitudes in the context of older workers is lacking. Such research is imperative as past research has found that implicit attitudes play an important role in people's behaviour (Greenwald, Poehlman, Uhlmann, & Banaji, in press). Therefore the present research investigated the role that implicit attitudes play in behaviour in an employment-related context. Ultimately, this research aimed to increase understanding of the antecedents to barriers older workers face in employment, and in turn, contribute to the endeavour to reduce discrimination based on age.

The present research is important and timely for various reasons. First, the world of work is changing and one of the major features in this change is the ageing workforce (Statistics New Zealand, 2004). Older workers have been reported to experience discrimination both in employment and in job seeking (McGregor & Gray, 2001), despite the fact that research evidence largely suggests no performance differences between older and younger workers (McEvoy & Cascio, 1989; Salthouse & Maurer, 1996; Waldman & Avolio, 1986). Understanding what may be driving such

discriminatory practices is important. As will be discussed, people's attitudes are a possible cause of discriminatory behaviour (Greenwald & Krieger, 2006), and one potential, yet to be investigated, basis for such discrimination are negative implicit attitudes towards older workers.

Furthermore, Greenwald, Poehlman, Uhlmann and Banaji (in press) have recently called for more research into the predictive utility of implicit measures due to the increasing interest of using such measures "for applications in law, policy, and business" (p. 7). The use of implicit measures in organisational contexts has received relatively little attention in the research literature however. Consequently, the present research investigated the relationship between attitudes and behaviour in an employment related domain. Importantly, one of the studies in the present research investigated attitudes towards older workers with organisational decision-makers, specifically with a sample of Management and Human Resources professionals. It is important to investigate the attitudes of those individuals who are responsible for decisions regarding, for example, employee selection and promotion decisions that directly influence older workers. Further, it is those professionals who are likely to be affected by any potential applications that may arise from the present research. Investigating professionals' attitudes also ensures the applicability of the research findings to the actual employment situations. To the author's knowledge, no research has investigated implicit attitudes in an employment related domain using professionals as participants.

Finally, research suggests that implicit attitudes are not as stable as traditionally thought and many factors have been found to influence implicit attitudes. However,

whether a change in implicit attitudes is also reflected in subsequent behaviour has not been previously investigated. Such research has been recently called for (Johnson, Maio, & Smith-McLallen, 2005) as it would provide some clarity for the debate surrounding the importance of attitude malleability. That is, providing evidence that attitude malleability is reflected in subsequent behaviour indicates that such changes in attitude measurement are not trivial and, further, suggests a potential avenue for a more permanent implicit attitude change. Therefore, the present research investigated the role attitude malleability may play in the attitude-behaviour relationship.

In sum, the present research aimed to apply the dual-attitude framework for studying attitudes towards older workers, to investigate the relationship between attitudes and behaviour, and to investigate the potential role attitude malleability may play in the attitude-behaviour relationship. In this chapter, attitudes towards older workers and the dual approach to attitudes in general will be discussed. The measurement of attitudes from a dual-attitude approach will be considered, followed by a discussion on the relationship between attitudes and behaviour. Finally, the notion of attitude malleability will be considered.

Attitudes towards older workers

Attitudes towards older workers have often been found to be negative. That is, *ageism* has been widely documented (Equal Employment Opportunity Trust, 2002, 2006; Loretto, Duncan, & White, 2000; Lyons, Hallier, & Glover, 1998; McGregor & Gray, 2002; Steinhauser, 1998; M. Wilson & Kan, 2006), and can be defined as “a process

of systematic stereotyping and discrimination against people because they are old” (Monsees, 2002, p. 36)¹.

The topicality of ageism cannot be ignored. Lower rates of reproduction and low mortality rates have contributed to the shift in age distribution in New Zealand (median age of the population was 36.1 years in 2007 compared with 33.2 years in 1997), following a trend also evident in other Organisation for Economic Co-operation and Development (OECD) countries (Statistics New Zealand, 2007b; Danson & Hardill, 2006; McGregor, 2005). It has been estimated that in 2051, 54% of New Zealand’s population will over the age of 45, and 25% of the population will be over 65 years of age (Statistics New Zealand, 2004). The ageing population has direct consequences for the workforce. It has been estimated that in 2010, over half of the US workforce will be older than 40 years of age (Mosner, Spiegle, & Emerman, 2003). A similar trend is also seen in New Zealand, where the number of people in the older worker category (45-65 years; Statistics New Zealand, 2007a) has increased by 33.5% over the past decade, compared to 4.7% increase in the younger age groups (Statistics New Zealand, 2007b). Consequently, in 2005, McGregor estimated that in a decade, the majority of the workforce in New Zealand will be in the older worker category (McGregor, 2005).

For the purpose of the present research, older workers were defined as 45 years and older, and younger workers as 24-35 years of age. This is consistent with previous research (Statistics New Zealand, 2007a; Warr, 1994). It is acknowledged that there is some variability in the definition of an older worker. For example, the OECD defines

¹ The term ‘ageism’ was first used by Robert N. Butler in the Washington Post in 1969.

an older worker as an individual above the age of 55 (OECD, 2000), and the (US) Age Discrimination in Employment Act (1967) defines an older worker as an individual above the age of 40.

As a relationship between attitudes and behaviour, including discriminatory behaviour, has been established (Greenwald et al., in press), investigating attitudes towards older workers is important. That is, as attitudes play a role in behaviour, understanding people's attitudes is vital for steps to be taken to reduce discriminatory behaviour towards older workers. Due to such important consequences of attitudes, the concept has gained much research interest.

Attitudes

Since Allport's statement that "an attitude is probably the most distinctive and indispensable concept" in social psychology (1935, p. 798), attitudes continue to be one of the most researched domains in social psychology (Ajzen, 2001; Gawronski, 2007; D. T. Wegener, Clark, & Petty, 2006). Despite the vast amount of research that has been conducted in the area, numerous questions are still under debate, including the construct's definition (Albarracín, Zanna, Johnson, & Kumkale, 2005; Eagly & Chaiken, 1993; Fazio, 1990; Gawronski & Bodenhausen, 2007). For the purpose of the present research, Eagly and Chaiken's (1993, p. 1) widely accepted definition of attitudes as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" will be used as an operational definition of attitudes. This definition, as with many others, focuses on the evaluative aspect of attitudes (Ferguson & Bargh, 2007), also the focus of the present research.

The definition is consistent with various ways of responding, including cognitive, affective and behavioural expressions (Eagly & Chaiken, 1993, 2005; Fiske, 1998; Zanna & Rempel, 1988). That is, people can express their attitudes through behaving in a certain way (e.g., supporting a cause by signing a petition), through feeling a certain way about an attitude object (e.g., have a positive evaluations of the cause) or through holding certain beliefs attached to an attitude object (e.g., believing that the cause is a good one). Previous research that has investigated people's attitudes towards older workers has focused particularly on beliefs and discriminatory behaviour towards older workers.

Attitude research focusing on older workers has shown that a number of negative beliefs have been associated with older workers (Eagly & Chaiken, 1993, 2005). Such beliefs held by employers include: lacking energy and flexibility (Shah & Kleiner, 2005), being technologically ignorant (Davey & Cornwall, 2003), being less productive than younger people, being too expensive (McGregor & Gray, 2002; Shah & Kleiner, 2005; D. J. Smith, 2001; P. Taylor & Walker, 1994), and being less trainable and promotable compared to younger people (Arrowsmith & McGoldrick, 1996; Finkelstein, Burke, & Raju, 1995; Steinhauser, 1998). These beliefs are not, however, supported by the research literature, with the majority of research indicating a lack of a relationship between age and job performance (Maurer & Rafuse, 2001; McGregor, 2006; D. J. Smith, 2001; P. Taylor & Walker, 1994), and further, showing that older workers are likely to be more reliable and are less likely than are younger employees to leave the organisation or to be absent (McEvoy & Cascio, 1989; Commonwealth Fund, 1993, cited in McGann & Giles, 2002; Waldman & Avolio, 1986; Warr, 1994). It is apparent then that attitudes towards older workers are

inconsistent with research evidence. As will be discussed later, such attitudes may have important behavioural consequences, making research about such attitudes critical. It is important to note that not all beliefs about older workers are negative, but that various positive beliefs about older workers also exist, for example, as being reliable and loyal (Martocchio, 1989; Segrave, 2001). However, research has shown that people pay more attention to negative, than to positive, information (Ito, Larsen, Smith, & Cacioppo, 1998), and as will be discussed below, discrimination behaviour is evident towards older workers, likely to be driven by such negative beliefs (Davey, 2008).

Discriminatory behaviour towards older workers is widely documented. Older people find it more difficult to find employment (Arrowsmith & McGoldrick, 1996; Equal Employment Opportunities Trust, 2000a; McGregor & Gray, 2002), get fewer opportunities for job interviews (Finkelstein et al., 1995; McMullin & Marshall, 2001; Salthouse & Maurer, 1996; M. Wilson & Kan, 2006), and for job training and development (Salthouse & Maurer, 1996), and find it difficult to enter into some occupational areas (Higgins, 1996) than do younger workers.

Evidence of such negative beliefs and restricted opportunities for older workers supports the call for more research into the area of ageism (Glover & Branine, 1997; Loretto & White, 2006; B. A. Richardson, 2007). One, yet to be investigated, issue is that ageist attitudes may exist without the awareness of the individual, and importantly, that such attitudes may influence people's behaviour. Specifically, such attitudes may lead to discriminatory practices against older workers, in for example, employee selection decisions. An overview of the dual approach to attitudes follows.

Dual approach to attitudes

The dominant view for much of the 20th century was to consider attitudes as being under the control of the individual with the assumption that people are capable of accessing their attitudes and to control whether to report them or not (Greenwald & Banaji, 1995). The ability to exert control is one of the key features of explicit attitudes, which can be defined as attitudes which people are conscious of and aware of using (Reber, 1985). The application of such attitudes involves motivation from the perceiver and the availability of cognitive resources to engage in effortful processing (Greenwald & Banaji, 1995; Krosnick, Judd, & Wittenbrink, 2005). That is, as the individual is aware of their explicit beliefs and feelings about an attitude object (e.g., an elderly person), they can intentionally control the expression of such attitudes in different contexts, provided they are motivated and have the cognitive resources to do so. For example, research has found that as it may not be socially acceptable to express negative views against a minority ethnic group, people may choose to convey more egalitarian feelings in the hope of complying with the present social norms (Nosek & Banaji, 2002a).

However, people may not always be aware of the attitudes they hold, or have introspective access to their attitudes. That is, attitudes can also be implicit. Implicit attitudes have been defined as “evaluations for which people may not initially have conscious access and for which activation cannot be controlled” (McConnell, Rydell, Strain, & Mackie, 2008, p. 793). Implicit attitudes are thus considered as being activated without intention or control when the attitude object (or a relevant cue) is present (Devine, 1989; Fazio, 1986; Greenwald & Banaji, 1995). Importantly, such attitudes may guide people’s behaviour (Dovidio, Kawakami, & Gaertner, 2002;

Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; McConnell & Leibold, 2001; T. D. Wilson, Lindsey, & Schooler, 2000). Research on implicit attitudes is an active area due to the lack of clear consensus on what implicit attitudes are and how they function (D. M. Amodio & Devine, 2006; Devine, 2001; Eagly & Chaiken, 2005; Fazio & Olson, 2003a). As stated by Krosnick et al. (2005) “although implicit attitudes offer great promise...at present their claims to validity rest largely on intuitive appeals. It seems crucial that researchers in attitude measurement establish that such measures [of implicit attitudes], in fact, predict socially significant criterion behaviours” (p. 63). The present research aimed to contribute to the body of literature investigating the predictive utility of both implicit and explicit attitudes.

It is important to note that an individual’s implicit and explicit attitudes may differ; a person may not consciously endorse the automatically activated attitude. The dissociation between implicit and explicit attitudes will be discussed later.

Measurement of attitudes

The increase of research focusing on dual attitudes can be largely attributed to the growing number of measurement tools available to assess implicit attitudes.

An attitude is a hypothetical construct which is not directly observable (Krosnick et al., 2005). Measurement therefore has centre stage in attitude research as the construct cannot be assessed without inferences being made from measurement methods (Schwarz & Bohner, 2001). Since Thurstone’s (1928) assertion that attitudes

can in fact be measured, measurement issues have engaged many researchers' attention.

Attitude measures can be considered as direct or indirect (De Houwer & Moors, 2007; Fazio & Olson, 2003a). With direct measures, the participant is openly asked about their attitudes towards the attitude object. With indirect measurement, the object of measurement is not made explicit to the participant or the participant's attitudes but is inferred by means of other behaviour rather than directly asking the participant's response (Krosnick et al., 2005). As explicit attitudes are defined as attitudes which the respondent is aware of and has control over using, then direct measurement is appropriate to assess explicit attitudes as the respondent is directly asked about their attitudes. Consistently, the research literature often uses direct and explicit measurement of attitudes as synonyms. On the other hand, as implicit attitudes are defined as attitudes which the respondent may not be fully aware of, indirect measurement is needed to assess implicit attitudes as the person may not have introspective access to their attitudes and therefore such attitudes may not be measured with direct measures. Consistently, the research literature often uses indirect and implicit measurement of attitudes as synonyms (e.g., Nosek, 2005; Payne, Burkley, & Stokes, 2008). The terms implicit and explicit measures are also used in the present research.

Early attitude research has focused on explicit measures of attitudes. For example, with semantic differential scales (Osgood, Suci, & Tannenbaum, 1957), the respondent is asked to rate an attitude object on a continuum from one end of a bipolar scale to another (e.g., pleasant–unpleasant; good-bad). It is thus assumed that

the respondent is able to access their attitudes and report on those attitudes. However, it has long been recognised that when asked about their opinions, individuals do not (or can not) always answer truthfully.

One of the greatest drawbacks of explicit measures of attitudes is that they may not reveal the attitudes of the person, but rather, expressions that have been modified due to impression management (Osgood et al., 1957). Researchers have long recognised this weakness in attitude measurement, illustrated by an early statement by Allport (1935) that “most people reserve for themselves the right to say one thing and to think another” (p. 824). Various reasons have been outlined in the literature for why responses on explicit measures of attitudes may not reflect the actual views of the respondent (Allport, 1935; Campbell, 1950; Fazio & Olson, 2003a). One key reason is that individuals are aware that expressing negative views may not be socially acceptable and may therefore partake in the act of impression management when responding on explicit measures of attitudes (Nosek, 2005; Nosek & Banaji, 2002a). In addition, the opinion of the respondent may be inconsistent with their own egalitarian standards and therefore the individual responds in a manner which corresponds with their desire to maintain or display their egalitarian views (Fazio, Jackson, Dunton, & Williams, 1995; Plant & Devine, 1998). Self-presentation can thus be either socially deceptive (i.e., portraying a more positive view of oneself to the public) or genuine (i.e., responding in a manner corresponding with how the individual wishes to feel toward the attitude object) (Gaertner & Dovidio, 1986; Nosek, 2005). In addition, explicit measures of attitudes have been found to be influenced by seemingly minor changes such as question order and format of the questions, making them highly context dependent (Schuman & Presser, 1981).

Due to individuals' ability to influence their responses, the search for measures assessing an individuals' attitude without concern for impression management has been an active area of research (Gawronski, 2007; Jones & Sigall, 1971; Krosnick et al., 2005; Schwarz & Bohner, 2001). An example of an early method attempting to overcome impression management issues was the "bogus pipeline" technique, which leads participants to believe that the researcher can tell the participants' true feelings through an apparatus, and therefore the participants are less likely to engage in impression management (Jones & Sigall, 1971). However, such an attitude-measurement technique still assumes effortful processing of attitudes to which individuals have introspective access.

More subtle, implicit measures of attitudes, where the participant is not aware of the object of the measurement, have been used to gain less controlled assessment of people's attitudes. Implicit measures of attitudes aim to reduce normative pressures and do not assume that individuals have awareness of the attitude's influence on their behaviour. With such measures, the participant can still be aware of their attitudes, however, but unaware of using such attitudes. An attitude is inferred by means of behaviour other than asking people about their attitudes or the object of the measurement is being disguised (De Houwer & Moors, 2007; Greenwald & Banaji, 1995; Jones & Sigall, 1971; McConahay, 1986). For instance, Word, Zanna and Cooper (1974) showed that by observing participants' behaviour towards European and African American interviewees, inferences could be made about the participants' attitudes. Interviewers, for example, maintained greater physical distance from African American than from European American interviewees, indicating potential

negative attitudes towards African Americans in general. Milgram, Mann and Harter (1974) developed an interesting indirect technique to assess people's attitudes. Letters with postage addressed to various organisations were left in various locations by the experimenters. The dependent measure was how many letters were actually sent and to what organisations. The results showed that the likelihood that people posted such "lost" letters was considered as indicative of people's attitudes towards the organisation the letters were addressed to. For example, the 'Friends of the Nazi party' received significantly fewer letters than 'The medical research associates'. In addition, physiological responses, such as galvanic skin response measures, have also been used to infer people's attitudes (Rankin & Campbell, 1955). Implicit measurement of attitudes thus is not a recent development and numerous methods have been devised. However, such measures can be relatively complicated methods of assessing attitudes and it cannot always be ascertained whether an individual's attitude is the primary driver of the individuals' response (Krosnick et al., 2005; 1965). Various additional factors, such as social pressures, may be responsible for the results of such indirect measures of attitudes and it is simply assumed that the behaviour is related to an underlying attitude (Jaccard & Blanton, 2005; Krosnick et al., 2005).

A new class of implicit measures of attitudes has therefore emerged (Fazio & Olson, 2003a; Gawronski, LeBel, & Peters, 2007). These recently developed measures, based on associative strength, allow for straightforward, simple measurement and more robust research designs for investigating individual differences in implicit attitudes (Greenwald & Banaji, 1995).

Associative strength can be assessed by measures of response latency, based on the premise that more accessible associations enable a faster response. Some examples of implicit measurement tools, based on associative strength include affective priming (Fazio, Sanbonmatsu, Powell, & Kardes, 1986), semantic priming (Wittenbrink, Judd, & Park, 1997), the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), the Go/No-go Association Task (GNAT; Nosek & Banaji, 2001), the Extrinsic Affective Simon Task (De Houwer, 2003), the lexical decision task (LDT; Gaertner & McLaughlin, 1983) and the Single Category Implicit Association Test (Karpinski & Steinman, 2006).

As most research on implicit attitudes has been conducted using the affective priming task (Fazio et al., 1986) or the Implicit Association Test (Greenwald et al., 1998), the following section will briefly introduce these two measures.

The first implicit measure of attitudes using reaction times was the affective priming task (Fazio, 1986; Fazio et al., 1986). The task includes a brief presentation of a prime (i.e., an attitude object; e.g., guns) followed by a semantically unassociated evaluative target (i.e., a word such as 'happy'). The participant is asked to make a judgment of the target, such as judging whether it is a word or a non-word or is good or bad. It is thought that responding to an affectively congruent target would be facilitated and hence found easier and faster, in comparison to responding to an affectively incongruent target. For example, if the attitude object primes a positive evaluation then responses should be facilitated to positive rather than to negative targets. The difference in the reaction times for the congruent trials and incongruent trials is taken as an index of the strength of the associations between the attitude

object and target. The task has been frequently applied in implicit attitude research (Cunningham, Preacher, & Banaji, 2001; de Steno, Dasgupta, Bartlett, & Caidrie, 2004; Fazio et al., 1995; Gawronski, Deutsch, & Seidel, 2005; Maddux, Barden, Brewer, & Petty, 2005).

A closely related measure to the affective priming task is the Implicit Association Test (IAT; Greenwald, McGhee & Swartz, 1998), which is likely the most well known and widely used measure of implicit attitudes (Bassili & Brown, 2005). The IAT assesses the relative strength of associations between target categories and attribute dimensions using response latency as an index of the association.

Specifically, a participant completing an IAT is asked to make rapid responses to classify stimuli as belonging to one of two target groups (e.g., flowers and insects) and one of two polar ends of an attribute dimension (e.g., good and bad). The IAT is based on the premise that when closely associated concepts share the same response key (e.g., flowers & good), the responses are likely to be easier, and hence faster, than when weakly associated concepts share the same response key (e.g., flowers and bad). The reaction times are calculated for the congruent blocks (i.e., where flowers & good and insects & bad share the response keys) and the incongruent blocks (i.e., where flowers & bad and insects & good share the response keys) and the relative reaction times between the two blocks is taken as a measure of implicit attitudes between two target categories.

The use of implicit measures has been applied to affective evaluations (e.g., D. M. Amodio & Devine, 2006; Dasgupta & Greenwald, 2001; Dasgupta, McGhee, Greenwald, & Banaji, 2000; Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002;

Devos & Banaji, 2006; McConnell & Leibold, 2001; Rudman, Ashmore, & Gary, 2001; Shelton, Richeson, Salvatore, & Trawalter, 2005; Ziegert & Hanges, 2005), stereotypes (e.g., Blair, Ma, & Lenton, 2001; Dasgupta & Greenwald, 2001; Rudman et al., 2001), self concept (McCall & Dasgupta, 2007), self-esteem (Bosson, Sawann, & Pennebaker, 2000) and personality (Boldero, Rawlings, & Haslam, 2007; Schnabel, Banse, & Asendorpf, 2006), as well as to various domains of attitude research including racism (Dasgupta & Greenwald, 2001; Dovidio, Kawakami, & Beach, 2001; Fazio & Dunton, 1997; Frantz, Cuddy, Burnett, Ray, & Hart, 2004; Karpinski & Hilton, 2001; M. A. Olson & Fazio, 2006; Rudman & Lee, 2002), attitudes towards males and females (Banaji & Greenwald, 1995; Blair et al., 2001; Dasgupta & Asgari, 2004; Nosek, 1999), attitudes towards homosexuals (Banse, Seise, & Zerber, 2001; Lemm, 2006), attitudes towards use of contraception (Marsh, Johnson, & Scott-Sheldon, 2001), and attitudes towards old and young people (Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001), to mention a few.

Implicit measures based on associative strength have been to be less susceptible to social desirability concerns than are explicit measures of attitudes, to have independent power in predicting behaviour (as will be discussed), to avoid problems to do with self-deception, and importantly, to assess attitudes that the respondent may not be aware of having (Greenwald & Nosek, 2001; Greenwald et al., in press; Nosek, Greenwald, & Banaji, In press; Poehlman, Uhlmann, Greenwald, & Banaji, 2004). It is noteworthy that as individuals are not necessarily aware of their implicit attitudes, they may not consciously agree with the findings of implicit attitude measurement. Indeed, the developers of the now infamous Implicit Association Test (IAT;

Greenwald et al., 1998) have been said to be surprised of their own implicit attitude measurement findings (Banaji, 2001).

A great deal of research has been conducted using implicit measures of attitudes, typically, towards a minority ethnic group. A robust finding in research is that more negative implicit affective evaluations are associated with African Americans relative to European Americans (e.g., Dasgupta & Greenwald, 2001; Kawakami, Phillips, Steele, & Dovidio, 2007; McConnell & Leibold, 2001; Rudman et al., 2001). More recently, implicit research has also been applied to specific beliefs rather than overall evaluations. For example, Blair, Ma and Lenton (2001) showed that individuals associate women with weakness and men with strength. The present research aimed to extend the research on dual attitudes to the domain of older workers. Negative explicit attitudes towards older workers have been previously documented; however, the existence of such attitudes on the implicit level has not been demonstrated.

Implicit measures of attitudes in an organisational context

Although implicit attitude research does not exist on older workers, some research has been conducted on the potential of using implicit measures in other organisational contexts. For example, in an unpublished study (Haines & Sumner, cited in Haines & Sumner, 2006), Haines and Sumner measured job satisfaction using an IAT, providing initial support for the ability to measure work attitudes with implicit measurement tools in organisational settings. Importantly, Haines and Sumner (2006) raised the possibility that implicit biases may influence important organisational decisions, such as hiring, promotion and dismissals, and therefore, that implicit

measurement may be useful in investigating implicit attitudes in an organisational context.

In addition, Ziegert and Hanges (2006) conducted one of the few studies using implicit measurement of attitude in an organisational context. The researchers investigated how implicit racist attitudes were related to a hiring task and how such biases interacted with an organisational climate justifying discrimination.

Interestingly, implicit racist attitudes predicted outcomes of the hiring task, but only when the organisational climate permitted so. Specifically, for the participants who received an alleged memorandum from the company's president indicating their desire to hire European American employees, a relationship between implicit attitudes and discriminatory behaviour in the hiring task was found. The research showed that implicit measures of attitudes do indeed have predictive utility in an organisational setting, above that of explicit attitude measures. It should be noted, however, that the study used a sample of undergraduate university students, raising questions about the generalisability of the results to actual decision makers in organisations. That is, it is possible that being exposed to employment related activities, such as hiring decisions can influence people's attitudes and therefore it is possible that experienced professionals may indeed have quite different attitudes to inexperienced students. It is also noteworthy that the president's memo was very direct in its intent, that is, the president stated that "it is essential we put a White person in the VP position..." (p. 558), unlikely to correspond to a real world situation where such a pressure is likely to be more subtle.

In an earlier study, Rudman and Glick (2001) conducted a study investigating the potential backlash towards agentic females due to not them not conforming to the traditional feminine role. The participants saw a job application for the University's computer laboratory manager's position. Each participant received either a masculine (i.e., focus on technical skill, being ambitious, etc) or feminised (i.e., focus on helpfulness and sensitivity to others) job description and evaluated a male applicant, an agentic female or an androgynous female applicant. The participants were shown a videotape of the interview and they were also given the applicant's essay on their life philosophy to read. The participants' task was to evaluate the participant on dimensions such as competence and hireability. Following the applicant evaluation task, the participants completed measures of explicit and implicit beliefs regarding sex and communality and agency. The results were as expected; those implicitly associating females with communality (and males with agency) evaluated the agentic female applicant as interpersonally deficient when applying for the feminised job.

The above mentioned studies provide evidence that implicit measurement can be used in an organisational context, but research in the area is relatively scarce. Indeed, Greenwald and colleagues have recently called for further research into implicit measurement of attitudes, and their predictive utility in particular, due to the increasing interest of using such measures in organisational settings (Greenwald et al., in press). Research on implicit measurement in organisational settings has been called for by other researchers as well (Babcock, 2006; Haines & Sumner, 2006; B. A. Richardson, 2007). The present research aimed to contribute in the area of implicit attitude measurement in an employment context. Specifically, the research focused on attitudes towards older workers, including an investigation of such attitudes with a

sample of professionals and investigated the link between attitudes and behaviour in an employment-related context. The research is intended to contribute to the body of knowledge on the operation and the potential consequences of bias towards older workers.

It is important to note however, that the vast increase in research involving implicit measures has also been accompanied by debates about what such tools actually measure (Arkes & Tetlock, 2004; Eagly & Chaiken, 2005; 2005). One of the major criticisms of measures such as the IAT has concentrated on the suggestion that what is assessed by implicit measures of attitudes is cultural knowledge rather than an individuals' personally endorsed attitudes (Arkes & Tetlock, 2004; Karpinski & Hilton, 2001; M. A. Olson & Fazio, 2004). That is, simply being a member of a society, one is subjected to a great deal of information, and learning such widely shared information is inevitable. Being exposed to, for example, the common belief that older workers are untrainable is inevitably learned simply by being a member of a society. The cultural knowledge argument proposes that implicit measures of attitudes assess this cultural knowledge rather than personally endorsed attitudes. Such an argument is consistent with Devine's (1989) dissociation model that asserts that cultural stereotypes are shared by all, but endorsement of such stereotypes varies across individuals. However, the fact that individual differences exist in implicit measurement would suggest that such measures assess associations beyond culturally shared knowledge (Fazio et al., 1995; Greenwald et al., in press; Nosek & Hansen, 2008; Rudman & Ashmore, 2007). For example, Fazio and colleagues' research (1995) showed that individuals' level of implicit prejudice was related to their subsequent interaction with an African American experimenter. That is, implicit

measures of attitudes have been found to assess individual differences, beyond those based simply on the perceiver's environment (Banaji, Nosek, & Greenwald, 2004).

Relationship between implicit and explicit measures of attitudes

The relationship between implicit and explicit measures of attitudes have been found to vary widely and overall, research shows a complex picture (Nosek, 2005). A great deal of research has shown that implicit and explicit attitudes are frequently disassociated. For example, in a summary of data collected over six years (over 2.5 million responses across 17 different target groups), Nosek, Banaji and Greenwald (2002a) found that on average, the direction of the implicit-explicit attitude association was positive and significant, indicating that those individuals showing stronger bias on implicit measures also showed stronger bias on explicit attitude measures, although on average, this relationship was only weak (i.e., small effect size).

The explanations in the literature with regards to the relationship between implicit and explicit attitudes vary depending on whether they are seen as components of a single construct or as two independent constructs.

The single representation view suggests that different measurement methods allow for a varying degree of control to be exerted over the responses. Implicit measures of attitudes may provide a measure of attitudes which has not been influenced by awareness and choice of editing the response. Explicit measures of attitudes in contrast, allow for such editing to occur although such editing is dependent on the

respondent's motivation and ability to do so (Eagly & Chaiken, 2005; Fazio & Olson, 2003a). That is, implicit measures of attitudes may allow less editing and explicit measures may simply show a 'corrupted' version of attitudes, due to impression management. For example, as expressing negative attitudes towards an attitude object (e.g., an ethnic group) may not be socially acceptable, people may respond in a more favourable manner than without the presence of such governing social norms. Fazio, Williams and Sanbonmatsu (1990, cited in Bassili & Brown, 2005), for example found that varying the attitude object sensitivity explained whether an implicit-explicit correspondence of attitude measures was found. The more controversial the topic in question (e.g., pornography), the lower was the correspondence between the attitude measures, indicating that the respondents were likely to edit their explicitly measured responses to varying degrees depending on the topic in question.

Much research suggests however, that implicit and explicit measures of attitudes assess distinct constructs (Nosek, 2005). This independent evaluations view (Greenwald & Banaji, 1995; T. D. Wilson et al., 2000) posits that the frequent non-correspondence of implicit-explicit measures of attitudes is due to implicit and explicit attitudes reflecting two separate attitudes. Wilson, Lindsey and Schooler (2000) proposed a dual-attitude model in which implicit and explicit attitudes are considered to be distinct representations with generally only one attitude construct active at any given time. Implicit and explicit attitudes can be dissociated with one attitude influencing the responses on an implicit measure and another influencing the responses on an explicit measure. Individuals' motivation and capacity influence such accessibility in that as implicit attitudes are activated automatically, both motivation and cognitive resources are required to retrieve an explicit attitude and, if required, to

override the spontaneously activated implicit attitude. Even when an explicit attitude is activated, implicit attitudes will still influence spontaneous behaviours or behaviours that respondents do not see the attitude as being relevant to (Wilson et al., 2000)

Much research evidence suggests that implicit and explicit attitudes can be considered as two different constructs (Greenwald & Nosek, 2008; Nosek, 2005). Not only has research shown that implicit and explicit attitudes are often weakly associated, there is also behavioural evidence to support the notion of two constructs. In a recent meta-analysis, for example, Greenwald and colleagues (in press; see also Poehlman et al., 2004) showed implicit and explicit attitudes having independent power in predicting various behaviours, providing strong support for distinct construct validity of both implicit and explicit attitudes.

The relationship between implicit and explicit attitudes continues to attract much research, including how the two types of measures may be related to behaviour (Fazio & Olson, 2003a; Nosek, 2005). This was also an aim in the present research, which investigated the relationship of implicit and explicit attitudes and their predictive utility in an employment related context.

Attitude-Behaviour Relationship

From the early days of attitude research, attitude was considered a precondition of behaviour illustrated by Allport's (1935) statement that "attitudes determine for each individual what he will do" (p. 806). Indeed, attitudes' relationship with behaviour

was often taken for granted (Ajzen & Fishbein, 2005). However, such a relationship was called into question as studies often demonstrated the predictive validity problem of attitudes, where a lack of, or an inconsistent, relationship between attitudes and behaviour was found (Wicker, 1969). Indeed, Abelson (1972) called for the abandonment of the concept of attitudes if they did not predict behaviour.

The situation has dramatically changed from such demands, as it is now widely agreed that attitudes do in fact predict behaviour. However, the circumstances under which the attitude-behaviour relationship is being investigated are important.

Research evidence has indeed shown that various moderating variables influence the attitude-behaviour relationship (e.g., Glasman & Albarracin, 2006; Nosek, 2005; Nosek & Banaji, 2002a). Early research found correlations between attitudes and behaviour to be “rarely above .30 and often near zero” (Wicker, 1969, p. 65).

However, with research taking moderating variables are taken into account, correlations have been found to be .40 or higher (e.g., Glasman & Albarracin, 2006; Wallace, Paulson, Lord, & Bond, 2005). For example, in domains where social norms are likely to be strong (e.g., interracial interactions), attitudes are less likely to be predictive of behaviour if the attitude measurement allows for control to be exerted on the attitude responses (Greenwald et al., in press). That is, the type of attitude measure used, implicit or explicit, has been found to influence whether a relationship between attitudes and behaviour is found.

Research has shown that people’s explicit attitudes can be related to people’s behaviour. The relationship between explicit attitudes and behaviour is not surprising as people may base their behaviour on their attitudes. Nosek and Banaji (1998), for

example, found that liking for mathematics and choosing math-intensive majors were closely related (Nosek, Banaji, & Greenwald, 1998). In addition, Karpinski and Hilton (2001) found that explicit attitudes towards apples and candy bars predicted whether participants chose a candy bar or an apple as a reward to take home with them after completing their study. Recent meta-analysis showed that explicit measures of attitudes showed a positive, moderate relationship with behaviour (Greenwald et al., in press). In particular, as highlighted above, explicit measures of attitudes were predictive of attitudes in domains where social norms were not strong, such as voting behaviour (Karpinski, Steinman, & Hilton, 2005).

In addition, attitude research now recognises that implicit attitudes also play an important part in influencing people's behaviour (Greenwald et al., in press). In general, implicit attitudes are thought to guide behaviour unless more controlled, explicit attitudes, are being activated (Fazio, 1990; Greenwald & Krieger, 2006; T. D. Wilson et al., 2000). The utility of using both implicit and explicit measures is therefore demonstrated by the research findings that show implicit measures having predictive power over and above that of explicit measures of attitudes (Greenwald et al., in press). In addition, the type of behaviour that implicit and explicit measures predict has been found to be different. Specifically, implicit measures have been found to be predictive of spontaneous behaviours, such as friendliness (Dasgupta & Rivera, 2006; Dovidio et al., 2002; McConnell & Leibold, 2001), whereas explicit measures of attitudes have been found to be predictive of more controllable behaviours, such as verbal behaviours towards an interaction partner (Dovidio et al., 2002). Such differing predictive utility will be discussed later.

Although the focus on implicit attitudes is relatively recent in contrast to explicitly measured attitudes, increasing amount of research has demonstrated a relationship between implicit attitudes and behaviour. In a study particularly influential for the present research, McConnell and Leibold (2001) had participants interact with a European American confederate, playing the part of an experimenter, then completed a measure of implicit race attitudes and a measure of explicit race attitudes, and subsequently interacted with an African American experimenter, again actually a confederate. The confederates rated the interactions on a number of social behaviours. The interactions were also videotaped and later coded by two independent judges. The participants' implicit attitudes (as measured by the Implicit Association Test; IAT; Greenwald et al., 1998) were found to be related to the judges' and the confederates' ratings of the participants' behaviour such that those with stronger implicit bias against African Americans, relative to European Americans, were rated less positively by the African American, relative to the European American, confederate. Although the confederates' evaluations were also related to the participants' explicit attitudes, none of the specific social behaviours (e.g., smiling, speech errors, fidgeting, etc; rated by the judges) correlated with the explicit measures of attitudes, providing support for the predictive utility of implicit over explicit measures of attitudes. The study provided important evidence for the relationship between implicit attitudes and behaviour, and highlights the importance of assessing implicit attitudes as they may predict different types of behaviour as compared with explicit attitudes.

A relationship between implicit attitudes and behaviour has now been shown in various attitude domains, including inter-racial interactions, behaviour towards

overweight individuals, behaviour towards the use of contraception and substance abuse (Bessenoff & Sherman, 2000; Dasgupta & Rivera, 2006; Dovidio et al., 2002; Dovidio et al., 1997; Fazio et al., 1995; Greenwald et al., in press, for a recent meta-analysis; Marsh et al., 2001; McConnell & Leibold, 2001; Rooke, Hine, & Thorsteinsson, 2008).

Despite various studies providing evidence for the relationship between implicit attitudes and behaviour, research evidence on the relationship between attitudes and behaviour has not been consistent (e.g., Glasman & Albarracin, 2006 for a recent meta-analysis). For example, Karpinski and Hilton's (2001) study showed a non-significant relationship between their implicit measure of attitudes (the IAT) and the participant's choice in choosing either an apple or a candy bar. One potential source of such variation in attitude-behaviour studies is the different ways that attitudes have been measured and the types of behaviours that have been assessed (Dovidio et al., 2002; Dovidio et al., 1997). That is, as attitude measures can be conceptualised as either implicit or explicit, behaviour can also be categorised depending on the amount of control an individual has over it (Dovidio et al., 1997; Greenwald et al., in press). Indeed, recent dual process models of social cognition suggest that implicit and explicit attitudes are likely to predict different types of behaviour, specifically, that explicit attitudes are likely to be predictive of more controlled behaviours and that implicit attitudes are likely to be predictive of spontaneous behaviours (Asendorpf, Banse, & Mucke, 2002; Fazio, 1990; T. D. Wilson et al., 2000). It is such differences in predictive utility that makes research into implicit processes particularly important (Eagly & Chaiken 2007).

It is important to note, however, that a definite taxonomy of spontaneous and deliberative behaviours does not exist (Dovidio et al., 2002; Dovidio et al., 1997). It is largely agreed, however, that some behaviours are easier to control than others. For example, non-verbal behaviours are generally less monitored and controlled than are verbal behaviours (Dovidio et al., 2002; Dovidio et al., 1997). However, even within verbal and nonverbal behaviours great variability exists. For example, some nonverbal behaviour can be more controlled than others (e.g., eye contact vs. body posture) and some verbal behaviours may be more controlled than others (e.g., speech errors vs. semantic content) (Ambady & Rosenthal, 1992; DePaulo, 1992; Ekman & Friesen, 1969).

Past research evidence supports the prediction that implicit and explicit attitudes predict spontaneous and more controllable behaviours, respectively. Dovidio et al. (1997), for example, found that the participants' implicit race attitudes were related to non-verbal behaviours (blinking and visual contact), whereas explicit race attitudes were related to the relative evaluations of the African American and White interaction partners. In a later study, Dovidio and colleagues (2002) further investigated the relationship between explicit and implicit measures of attitudes and behaviour. As predicted, the participant's explicit attitudes related to their verbal behaviours and implicit attitudes to their non-verbal behaviour.

Importantly, when spontaneous behaviours and controllable behaviours are not consistent, it has been suggested that less controllable behaviours may be more revealing of a person's attitudes due to the difficulty to engage in impression management (Ambady & Rosenthal, 1992). For example, research has found that

judges revealed their expectations of a defendant's guilt through their nonverbal behaviour (Blanck, Rosenthal, & Corded, 1985). Specifically, Blanck et al. (1985) asked raters to code their perceptions of judges' behaviour when delivering their instructions to juries. By viewing the situations without verbal information, the raters' perceptions of judges' behaviour varied depending on the judges' information on the criminal history of the defendant. Specifically, when the defendant had more severe criminal history, observers coded the judge's behaviour less positively, for example, as showing less warmth and competence. Such behaviour was also related to the outcome of the trials. Further, Vicent, Friedman, Nugent and Messerly (1979) found that couples pretending to be happy could be distinguished from genuinely happy couples from their nonverbal behaviours (including ratings of laughter and how much attention was paid) during a problem solving task. It is noteworthy that research investigating nonverbal, spontaneous behaviours is not a recent development. Early behavioural studies suggested that various non-verbal behaviours, such as closer interpersonal distance, more eye contact, more direct shoulder orientation, and more forward lean, were the result of more positive attitudes towards the interaction partner (Mehrabian, 1968).

However, not all researchers agree that implicit measures of attitudes relate primarily to spontaneous responses (Bargh & Chartrand, 1999; Greenwald et al., in press; Rudman, 2004b). Recently, Rudman (2004) has argued that the strict dual process view that explicit measures predict controllable behaviours and implicit measures predict spontaneous acts is unnecessarily simplistic. As she notes, implicit measures of attitudes sometimes correlate substantially with highly controllable responses on explicit measures of attitudes (Nosek, 2004; Nosek & Banaji, 2002). Indeed, recent

meta-analysis by Greenwald and colleagues (in press) supports the less strict division between implicit and explicit measures' predictive utility. An implicit measure of attitudes (The Implicit Association Test; IAT; Greenwald et al., 1998) toward various attitude objects was found to be predictive of various behaviours in various domains, such as nonverbal behaviours and shyness (e.g., Asendorpf et al., 2002; Dovidio et al., 2002). Importantly however, the IAT was also predictive of more controlled behaviours such as consumer choices and voting behaviour (e.g., Brunel, Collins, Tietje & Greenwald, 1999, cited in Greenwald et al., in press; Maison, Greenwald, & Bruin, 2004).

Although the division of implicit and explicit attitudes' relationship with spontaneous and more controlled behaviours may not be straightforward, the important aspect is that both types of behaviour are likely to bear consequences for older workers. That is, both spontaneous and more controlled behaviours influence how others perceive the actor (Ambady & Rosenthal, 1992; Mehrabian, 1968). As stated by Ambady and Rosenthal (1992), "the way in which people move, talk, and gesture—their facial expressions, posture, and speech—all contribute to the formation of impressions about them" (p. 256). Importantly, research has shown that less positive spontaneous behaviour may have great importance for employees. For example, Word et al. (1992) found that interviewees showed worse applicant performance when their interviewers were trained to show less positive non-verbal behaviours. It can be speculated that an interviewer's negativity, expressed through the less controllable channels, is likely to influence the performance of older job applicants, and importantly, this negativity towards older applicants can be outside of the interviewer's awareness. This highlights the importance of educating and raising awareness of individuals' implicit

attitudes, particularly of those responsible for making employment related decisions, such as hiring, promotion and training related decisions in organisations. Similarly, individual's co-workers play an important role in the way one feels about one's workplace (Barrick & Zimmerman, 2005), and, as with interviewers, the co-workers', subordinates' and superiors' behaviour can influence the older workers adjustment in the workplace (Frank, Finnegan, & Taylor, 2004).

The present research thus investigated both spontaneous and more controlled behaviours. The present research is particularly important in the domain of older workers, due to the ageing population and the increasing number of older workers in the workplace.

Malleability of attitudes

As mentioned previously, implicit attitude measures were largely developed due to their ability to avoid some of the self-presentational confounds present in explicit measures of attitudes. That is, it has been long recognised that responses on explicit measures of attitudes vary as a function of the context in which attitudes are being elicited (Bassili & Brown, 2005; 1998). As discussed previously, factors such as impression management, question order or the wording of questions have been found to influence individuals' responses (Schuman & Presser, 1981). In contrast to explicit attitudes which have been thought of as more flexible, implicit attitudes have been traditionally conceptualised as relatively immutable and contextually independent mainly due to the lengthy, largely forgotten, socialisation experiences by which

implicit attitude have been assumed to form (Banaji, 2001; Eagly & Chaiken, 1993; Greenwald & Banaji, 1995; T. D. Wilson et al., 2000).

However, the initial conclusion that implicit attitudes are stable was hasty (Greenwald & Krieger, 2006). Research from the past decade or so has provided a great deal of evidence for the malleability of implicit attitudes (Blair, 2002, for a review). Various situational, motivational and cognitive factors have been found to influence implicit attitudes, with Blair's (2002) review alone mentioning over 40 studies showing such a malleability effect, with the use of various attitude-measurement tools and experimental manipulations.

Although the literature in the area of implicit attitude malleability has gained much attention in the past decade or so, the process behind such malleability remains largely unexplained (Blair, 2002; Gawronski & Bodenhausen, 2006). Current conceptualisations of implicit attitude malleability vary depending on how the attitude construct has been viewed. Various conceptualisations of attitudes have emerged (Fazio & Olson, 2003a), differing in their consideration of whether an attitude is a stable tendency or is constructed independently at any given situation. That is, traditionally, attitudes have been viewed as evaluative representations stored in memory, retrievable upon an encounter with a relevant attitude object, or an appropriate cue (Fazio, 1986; Fazio, Chen, McDonel, & Sherman, 1982). According to this dispositional view of attitudes, the mental representation underlying an attitude provides an enduring, stable summary evaluation of an attitude object (Kruglanski & Stroebe, 2005). From such a perspective, the malleability of attitudes can be interpreted as the experimental manipulations creating new attitude structures. These

structures would therefore influence responses on attitude measures as long as they remain accessible (Dasgupta & Greenwald, 2001; T. D. Wilson et al., 2000).

However, due to the increasing research evidence of contextual influences on attitudes and the inconsistencies in research findings on the predictive utility of attitudes, researchers have proposed a model of attitudes which disregards the idea that attitudes exist in memory, but rather that attitudes are constructed on the spot as the person encounters an attitude object or an appropriate cue (Schwarz, 2007; Schwarz & Bohner, 2001; E. R. Smith, 1998). Such constructionist models of attitudes posit that attitudes are formed from the beginning each time an object is encountered, and therefore attitude expression can be expected to vary from one context to another. Accordingly, attitude malleability is expected as attitudes are formed on the spot using the information that is currently available. That is, the results of implicit measures of attitudes are governed on the current context and therefore changes in attitude measurement results can and should be expected. However, research suggesting that attitudes can be highly consistent though time (e.g., Marwell, Aiken, & Demrath, 1987), seems to conflict with the strong constructionist view of attitudes. Proponents of the constructionist view have argued that the stability in the context in which attitudes are being elicited results in the similarity of attitude responses (Schwarz, 2007; Schwarz & Bohner, 2001). However, as most situations are likely to vary widely from one another such high consistency between contexts resulting in attitude consistency has been deemed implausible (Eagly & Chaiken, 2005; Fazio & Olson, 2007). Further, the constructionist view has been critiqued as the view considers the variability in the context can in fact be variability in the attitude construct itself (Eagly & Chaiken, 2005). That is, attitude

representation can be considered as multifaceted, therefore some variability can be expected (Eagly & Chaiken, 2007).

Although the current empirical evidence cannot determine whether people “have” attitudes or whether they are constructed online (Schwarz, 2007), a less strict view of the constructionist approach, combining both the existence of an attitude representation and the influence of context, seems plausible (Eagly & Chaiken, 2005). Maintaining attitudes as stable evaluations does not necessarily require the formation of a new attitude structure. Rather, context effects in attitude measurement are persistent because, consistent with the operational definition of attitudes used in the present study, attitude responses do not simply reflect the latent construct but also involve information available in the context in which attitudes are being elicited (Anderson, 1971; Bassili & Brown, 2005; Eagly & Chaiken, 2007). As discussed previously, explicit measures of attitudes are likely to be influenced by self-presentational concerns, whereas when using implicit measures of attitudes, specific set of associations of the attitude representation may become more accessible due to contextual influences.

Caution has also been urged by researchers in over-interpreting the malleability effect as manipulations rarely eliminate bias, but rather reduce it (Greenwald & Krieger, 2006). There is currently no evidence to confirm that an actual change of attitudes has occurred in an attitude construct as a function of an experimental intervention (Devine, 2001; Fazio, 2007). Importantly, researchers do not deny that enduring change of implicit attitudes is possible, however, such a process is deemed to require time and repeated exposure to counter-attitudinal information, as is the case for

change of explicit attitudes, and only few of the interventions used in past research meet these criteria (e.g., Fazio, 2007; Greenwald & Krieger, 2006). However, implicit attitude malleability can be considered as a good starting point for more enduring change to occur (Dasgupta & Greenwald, 2001). Dasgupta and Greenwald (2001), for example, showed that the malleability effect lasted for a period of 24 hours.

As the current research evidence does not allow clear conclusions to be made on what implicit attitude malleability is and what the consequences of such malleability are, further research has been welcomed in the area (Eagly & Chaiken, 2005; Krosnick et al., 2005). Research is yet to investigate how the predictive utility of implicit measures and the malleability of implicit attitudes interrelate (Johnson et al., 2005; Lane, Banaji, Nosek, & Greenwald, 2007). That is, whether changes observed in implicit attitude measurement are also reflected in subsequent behaviour has yet to be investigated. Such a relationship would provide researchers with greater confidence of the potential for change. Furthermore, by demonstrating that attitude malleability is also reflected in changes in behaviour, attitude malleability could not be considered as trivial as may be suggested by proponents of the strong constructionist view (Gregg, Seibt, & Banaji, 2006). The present research aimed to contribute to this area by investigating the malleability of attitudes and also the role it may play in the relationship with behaviour.

As mentioned above, various types of manipulations have been shown to result in the malleability effect. The interventions vary in how they attempt to influence implicit attitudes, although the interventions can be categorised depending on how much awareness the participant has of the intervention. Awareness of the intervention is an

important factor to consider if such interventions are to be applied in settings outside the laboratory. For example, applying an intervention that the individual is aware of and is an active participant in it may be more practical and ethical in an organisational setting than interventions where the individual has no awareness of an intervention taking place. The following section outlines the types of interventions by dividing them into three general categories: those interventions that the participant is not aware of, those interventions that the participant is an active participant in but is not aware of the purpose of the intervention, and those manipulations which the perceiver is an active participant, aware of the presence of the manipulation as well as its purpose.

Interventions that have been found to influence people's implicit attitudes without the participants' awareness include interventions where the context in which attitudes are being elicited has been manipulated. For example, Lowery, Hardin and Sinclair (2001) conducted a study where the race of the experimenter was varied. Those participants who were instructed by an African American experimenter showed less race bias on an implicit measure of attitudes as compared with those with a White experimenter. Similarly, target group member presence has been found to influence implicit attitudes in other studies, including Nosek and Banaji's (2002b) research where female participants were found to show more negativity towards mathematics in the presence of a male experimenter as compared with a female experimenter.

Manipulations where the perceiver takes an active role but does not necessarily have awareness of the purpose of the intervention include manipulations such as providing participants with counter-stereotypical examples of the target group. For example, Dasgupta and Greenwald (2001) exposed their participants to admired African

American individuals and disliked White individuals, depicted as a general knowledge test and as a separate study from the attitude measurement session. The results showed that the exposure to positive examples of the target group and negative images of the majority group lead to a reduction in negative implicit attitudes towards African Americans in general. The finding was also found with older and younger individuals, and the effect was found to persist for a period of 24 hours.

The final category includes those interventions where the perceiver has an active role and is fully aware of the intervention, including awareness of its purpose. Such interventions are less commonly used in research but some evidence has been gathered to indicate that people's deliberate intentions may influence the responses made on implicit measurement tools. Lowery and colleagues (2001), for example, found a reduction on the implicit race bias when instructed to "be as non-prejudiced as possible" (p. 848). However, the outcomes of such interventions involving explicit instructions to avoid bias have not been consistent. Blair and colleagues (2001), for example, found no influence of their explicit instructions to suppress sex stereotypes.

Influencing people's implicit associations is an important avenue for continuing research due to implicit attitudes' influence on behaviour. Specific to the current research, providing counter-stereotypical information of the target group has been shown to be an effective method for manipulating implicit biases in past research (Dasgupta & Asgari, 2004; Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001). The past research suggests therefore that providing counter-stereotypical information influences the associations between an object and its evaluation. It is speculated that the exposure to positive exemplars of the target category would strengthen the

positive associations to the target category, increasing the likelihood of such positive evaluations being accessible in later occasions when encountering a target group member. Such an intervention was chosen for the potential applicability to organisational contexts where including the participant as an active partaker is important, as considered above.

Overview of present studies

The present research investigated implicit and explicit attitudes towards older workers. The relationship between both implicit and explicit attitudes and behaviour was also investigated, with both spontaneous and more controlled type of behaviours being measured. Finally, attitude malleability and the role it may play in the attitude-behaviour relationship was also investigated.

The present research consisted of five studies investigating implicit and explicit attitudes in the domain of older workers. A pilot study was conducted to establish whether the subsequent research should focus on affective or cognitive components of attitudes, and which particular measurement tool was to be used in the main studies. Study 1 investigated the existence of implicit bias towards older, relative to younger, workers – that is, more positive implicit attitudes toward younger than older workers – and whether such attitudes are influenced by an experimental intervention, specifically, a mental imagery exercise. Using a sample of Management students, Study 2a sought to replicate the findings and in addition investigated explicit attitudes towards older and younger workers. The study also measured the respondents' motivations to respond without bias. As students were used as a sample in the

previously mentioned studies, Study 2b sought to replicate the findings with a sample of Human Resources and Management professionals. The final study, Study 3, investigated the relationship between attitudes towards older, relative to younger, workers and behaviour. Specifically, participants took part in a pre-employment interview exercise where each participant interviewed an older and a younger applicant. The participants' implicit and explicit attitudes towards older and younger workers were measured before the exercise. The mental imagery exercise was included to investigate the role attitude malleability may play in the attitude-behaviour relationship.

Pilot study

As discussed in the Introduction section, various implicit measures of attitudes are now readily available. Such tools have been applied in various contexts and have been used to measure both affective and cognitive components of attitudes (e.g., Blair et al., 2001; Carpenter & Banaji, 2001; Rudman et al., 2001). Many of such implicit measures are based on the notion of associative strength between an attitude concept and its evaluation, or its associated concepts. The associative strength can be assessed by measures of response latency, based on the premise that more accessible associations enable a faster response. However, the measures also vary from one another, for example, in whether the measure is an absolute measure of one category (e.g., attitudes towards African Americans) or a relative measures (e.g., attitudes towards African Americans, relative to European Americans), or whether the focus of the measure is on activation or on the application of attitudes (Breuer et al., 2000). The Lexical Decision Task (Meyer & Schvaneveldt, 1971), for example, can be used as a measure of stereotype activation, whereas the stereotypic explanatory bias measure (Sekaquaotewa, Espinoza, Thompson, Vargas, & von Hippel, 2003) is based on how the participant applies their implicit attitudes in a context where a sentence could be completed with stereotypical or nonstereotypical explanations.

As there are various possible measures, a pilot study was conducted to choose an implicit measure of attitudes for the main studies. Specifically, the pilot study was conducted to choose whether implicit attitudes should be studied with affect or cognition based measures. Although a majority of implicit attitude research has been conducted on affect-based evaluations, it was also of interest whether implicit

stereotype activation (i.e., cognitive evaluations) could be assessed. Previous research has found that some target groups may not have as strong stereotypes attached to them and therefore an affective measure may be more useful (e.g., Bessenoff & Sherman, 2000). In addition, as numerous implicit measures are available, the pilot study included two measures of both cognition and affect based measures. The intent was to investigate whether there was evidence of bias on the implicit measures and to ensure that the tools were functioning as intended, that is, that the tools would be a sensitive measure of attitudes in that the measures would show stereotype activation or affect-based attitudes towards the target group.

Four measurement tools were chosen for the present pilot study, with two cognition-based tools and two affect-based tools. A modified Stroop task (Stroop, 1935) and a Lexical Decision Task (LDT; Gaertner & McLaughlin, 1983) were chosen as the measures of cognition-based evaluations, and the Implicit Association Test (IAT; Greenwald et al., 1998) and the Go/No-Go Association Task (GNAT; Nosek & Banaji, 2001) were chosen as the affect-based measures. Details of these measures are discussed in the method section but the methods are described briefly here. In the modified Stroop task, a participant is asked to identify the colour ink of words displayed on a computer screen. The semantic content of the words is stereotypic, non-stereotypic or irrelevant of the target group in question. The task is based on the premise that participants will find it more difficult (and hence make slower responses) to identify the ink colour of those words which semantic associations have been activated. It is argued that the automatic activation of the semantic meaning of the word interferes with the naming of the ink colour and therefore leads to slower identification times. The modified Stroop task has been previously applied in implicit

research, including research on implicit self-esteem (Bosson et al., 2000), implicit sex stereotypes (Gollwitzer & Schaal, 1998) and implicit stereotypes of skinheads (Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000).

The Lexical Decision Task is also based on the activation of the semantic meaning of words. In the LDT, the participant is asked to make rapid decisions whether a letter string presented is a word or a non-word. The words are stereotypic, non-stereotypic and irrelevant to the target group in question. The task is based on the premise that when the semantic content of the word is activated, the response to such words would be faster. The LDT has been applied in research including stereotypes on skinheads (Macrae, Bodenhausen, Milne, & Jetten, 1994), and racial stereotypes (Sinclair & Kunda, 1999; Wittenbrink, Judd, & Park, 2001a).

The IAT measures the strength of the association between two target groups (e.g., overweight/healthy weight) and two opposites of an attribute dimension (e.g., pleasant/unpleasant). The participant is asked to make rapid decisions about which category a presented target stimulus belongs to by pressing an allocated key on the keyboard. The IAT is based on the premise that when congruent, strongly associated concepts share a response key (e.g., overweight & unpleasant; healthy weight & pleasant), the responses are faster than when incongruent, less associated concepts share a response key (e.g., healthy weight & unpleasant; overweight & pleasant). It is the difference between these two tasks, congruent and incongruent, that is taken as a measure of attitudes towards one target category (e.g., overweight), relative to the other target category (e.g., healthy weight). The IAT has been widely applied in implicit attitude research, including in the domains of racism (e.g., Cunningham et al.,

2001; McConnell & Leibold, 2001), personality (Egloff & Schmukle, 2002), attitudes towards contraception (Marsh et al., 2001), and sex stereotypes (Carpenter & Banaji, 2001).

Finally, the GNAT is based on a similar concept of associative strength as the IAT, but does not require a contrasting target category. In addition, rather than using reaction times as the measure of the association strength, the GNAT uses signal detection analysis by focusing on the accuracy (i.e., correct and incorrect responses) in the categorisation task. The GNAT requires the participant to make rapid choices whether a presented stimulus belongs to the target categories presented (e.g., overweight & pleasant) or not. As with the IAT, the GNAT involves both congruent and incongruent blocks, where the target category (overweight) is paired with a congruent attribute dimension in one block (i.e., unpleasant) and an incongruent attribute dimension in another block (i.e., pleasant). The difference in accuracy between these two blocks is taken as a measure of implicit attitudes. The GNAT has been applied in research including in studies of implicit racism (Mitchell, Nosek, & Banaji, 2003), implicit sex stereotypes (Blair et al., 2001) and implicit personality (Boldero et al., 2007).

The measures were chosen as they have been successfully used in previous research, have been able to be applied to various contexts using various target groups, and could be easily adopted for the present research (Boldero et al., 2007; Foroni & Mayr, 2005; Mitchell et al., 2003; Poehlman et al., 2004). In addition, all the measures could be considered as measures of attitude activation rather than application (Brauer et al.,

2000), an important consideration for the pilot study, as the application of attitudes was to be investigated in a main study.

In addition, the pilot study was used as an opportunity for initial investigations into the malleability of implicit attitudes. As various manipulations have been used in previous research, the initial study investigated whether a manipulation, which the participant has awareness of, would be influential on implicit attitudes. Specifically, the manipulation involved giving the participants explicit instructions to avoid bias when completing the experimental tasks. Past research has shown mixed results with using explicit instructions as a way of manipulating implicit attitudes. Lowery and colleagues (2001) found instructions to be non-prejudiced reduced the strength of implicit prejudice towards African Americans, suggesting that implicit bias may be able to be reduced by deliberative intent. In contrast, Blair et al. (2001) found that their instructions to suppress gender stereotypes did not produce a difference in the implicit gender stereotypes. The above mentioned studies varied in their measures of prejudice or stereotypes, giving the present research an opportunity to investigate the influence of such an overt manipulation on both implicit affect and cognition based attitudes.

As discussed in the Introduction section, manipulations investigating attitude malleability can be categorised based on the respondent's awareness of the manipulation. If explicit instructions to avoid bias revealed significant malleability effect it could easily be included in organisational settings, where employer training for evaluations (e.g., performance management or interview training) might simply involve a mention of the existence of biases (e.g., stereotypes, halo error) and their

consequences, and instruction to avoid the use of such biases in evaluations. It is also possible however, that making participants aware of such biases may in fact increase their salience and therefore results in increased bias. Investigating such a possibility was deemed appropriate in the context of the pilot study.

The participant samples to be used in the subsequent studies in the present research were going to be drawn largely from one population (i.e., University of Canterbury students, particularly Management students). Although the intention was not to use the same individuals for the pilot and the main studies, it was likely that the participants would have interactions with one another. Due to the chance that the participants would discuss the subject domain of the research amongst each other, a separate target group was used in the pilot studies, to ensure that the target group of older workers was going to be novel once testing for the main studies would commence.

The target group of overweight individuals was chosen for the pilot studies due to the group's comparability to older workers, the target group to be used in the main studies. Both overweight individuals and older workers have been shown to be targets of discrimination (Bessenoff & Sherman, 2000; Crandall, 1994; McGregor & Gray, 2001; Puhl & Brownell, 2001), but expressing biases about overweight and older individuals is less likely to be influenced by social norms than is the case with expressing, say, racist or sexist attitudes (Bessenoff & Sherman, 2000; Crandall, 1994). For example, beliefs exist amongst employers that older workers are more resistant to change and have problems with technology, and such beliefs are readily expressed when asked (Gray & McGregor, 2003). Importantly, older workers

themselves have reported that employers have explicitly told them that they are too old for the job or that they would prefer hiring someone younger (McGregor & Gray, 2001). Similarly, Crandall (1994) has suggested that social norms are not strong for expressing negative attitudes towards overweight individuals. Further, both groups can be identified visually with ease and both groups are salient in today's society as a consequence of the growing obesity epidemic (Puhl & Brownell, 2001; World Health Organization, 2007) and the ageing workforce (Statistics New Zealand, 2004).

Method

Participants

Thirty University of Canterbury female students volunteered to participate in the study in return for a \$5 gift voucher. Only female participants were invited to take part to keep the evaluations same-sex only as sex was not a variable of interest. The participants' ages ranged from 18 to 45 years with a mean of 21.8 years. As the perceiver's own BMI has been found to have consequences on their attitudes towards the weight of others (Schwartz, O'Neal Champliss, Brownell, Blair, & Billington, 2003; Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003), the participant's body mass index (BMI) was recorded. The participants' BMI ranged from 17 to 37 with a mean of 23 (i.e. in the healthy weight range). Two participants were underweight (BMI < 18.5), 24 were of normal weight (BMI 18.5-25), 2 participants were overweight (BMI 25-30) and 2 participants were obese (BMI > 30).

Measures

Affect-based measures

Go/No-Go Association Task - A PC version (Walton, 2004) of the Go/No-Go Association Task (GNAT; Nosek & Banaji, 2001) was used to measure the strength of the association between a target category (overweight²) and two opposites of an attribute dimension (pleasant/unpleasant). The participant's task is to make rapid decisions between target and distracter items, and bias is indexed on the GNAT as the difference in accuracy between the task in which the target category and one attribute dimension is present (e.g., pleasant) and the task in which the target category and the other attribute dimension is present (e.g., unpleasant). The GNAT is based on the premise that those individuals associating the target category more with the attribute 'unpleasant' than 'pleasant' will find it easier to make decisions between the target and distracter items in the congruent block (i.e., where 'overweight' and 'unpleasant' are the categories) than in the incongruent block (i.e., where 'overweight' and 'pleasant' are the categories).

During the task, individual stimuli were presented in the middle of a computer screen. The participant was asked to make rapid decisions on whether a presented stimulus, a word or a photograph, belonged to the displayed category or the attribute dimension. The target category was 'overweight' and the attribute dimension was either 'pleasant' or 'unpleasant'. In one block the target category was 'overweight' and the

¹ During an initial pilot study to obtain the stereotypes for the cognition-based measures (see below), participants commented on the infrequent use of the target category title 'obese' and that the term was perceived as being associated more with medical diagnosis rather than used in everyday language. Therefore, the target category title was changed to 'overweight' for the main pilot study.

attribute dimension was ‘unpleasant’ and in another block the target category was ‘overweight’ and the attribute dimension was ‘pleasant’. When the stimulus presented belonged to the displayed category/attribute dimension, the participant’s task was to press the space bar (“go” response). When the stimulus presented did not belong to the displayed category/attribute dimension, the participant was to refrain from responding (“no-go” response). Stimuli were presented with an inter-stimulus interval of 300 ms. When a stimulus was presented, a response deadline for pressing the space bar was set at 600ms. If the participant did not respond within 600ms, the next trial appeared. Feedback was given to the participant after each stimulus, in a form of a green tick for a correct response or a red cross for an incorrect response. Correct responding was not required for the next trial to appear (i.e., the next trial appeared after the 600ms if no response was made).

The photographs used as the stimuli corresponding to the target category of ‘overweight’ were selected from clothing websites. All photographs were of females and each female’s face was blacked out to ensure the target’s anonymity and to control for facial attractiveness. The photographs were resized to a standard of 125 x 231 pixels. The final set of stimuli consisted of 18 photographs, with nine photographs of overweight women, three of underweight women and six of average weight women. The photographs were chosen as a result of a pilot study, where 10 female participants rated photographs of 32 women as either underweight, average weight or overweight. The pilot study showed little disagreement on the ratings of the photographs. Photographs rated only as overweight (i.e., and not as average weight or underweight) were chosen as the target photographs. The photographs used as the distracter items were photographs rated as either underweight or average weight.

Similarly to the target photographs, photographs were chosen as distracter items only if all participants agreed in their ratings. The final set of photographs is shown in Appendix A. The target words corresponding to the attribute dimensions consisted of nine positive words (*glad, splendid, paradise, marvellous, wonderful, excellent, fabulous, loving* and *beautiful*) and nine negative words (*painful, bad, hate, dislike, tragic, terrible, nasty, angry, and horrible*), chosen from the word lists provided by Nosek and Banaji (2001), who had previously selected words appropriate for the attribute categories used in the present study. The words and pictures were presented in a unique random order to each participant in each block.

The task comprised of five blocks of trials, three practice blocks and two critical blocks. The practice blocks, each involving presentation of 18 stimuli, involved only one target category/attribute and had a longer response deadline than the critical trials (850ms in blocks 1 and 2, and 800ms in block 3). The target categories for the practice blocks were as follows: block 1 'pleasant', block 2 'unpleasant', block 3 'overweight'. There were two critical blocks (i.e., blocks 4 and 5), one including the target category and the congruent attribute dimension (i.e., unpleasant), and another including the target category and the incongruent attribute dimension (i.e., pleasant). Each of the critical blocks comprised of 72 trials. In these critical blocks, the participant responded to the stimulus if it belonged to either to the target category or the attribute dimension. The difference in accuracy in discriminating between targets and distracters between the two critical blocks was taken as the measure of an implicit attitude towards the target category. The order of blocks 4 and 5 was counterbalanced across participants such that half of the participants completed the congruent block first (i.e., with target category 'overweight' and target attribute 'unpleasant') and half

of the participants completed the incongruent block first (i.e., with target category ‘overweight’ and target attribute ‘pleasant’).

Implicit Association Test (IAT) – A PC version (Walton, 2003) of the Implicit Association Test (IAT; Greenwald et al., 1998) was used. The IAT is similar to the GNAT in using associative strength as an index of implicit associations, except that the IAT is a relative measure between two target categories. The IAT measures the strength of the association between two target categories (e.g., ‘overweight’ and ‘healthy weight’) and two opposite ends of an attribute dimension (e.g., ‘pleasant’ and ‘unpleasant’), and is based on the principle that respondents find it easier (and hence are faster) to respond to trials where highly associated target and attribute categories share a response key as compared to trials where less associated target and attribute categories share a response key. The target categories in the present study were ‘overweight’ and ‘healthy weight’, and the attribute labels were ‘pleasant’ and ‘unpleasant’. Therefore, the congruent trials were those in which overweight and unpleasant, and healthy weight and pleasant categories shared a response key, and incongruent trials were those in which overweight and pleasant, and healthy weight and unpleasant categories shared a response key.

The IAT consisted of seven blocks of trials, each trial involving the presentation of a target word or a picture in the centre of the computer screen and two category labels, one in the upper right and one in the upper left hand corner of the screen. The attribute words for the IAT were identical to those used in the GNAT. However, as the GNAT distracter category included three photographs of underweight females, these were replaced with three photographs of average weight females to fit with the

category ‘healthy weight’ in the IAT³. The photographs were chosen from the pilot study described above. For each trial the participant’s task was to indicate, by pressing an allocated key on the computer keyboard (A or L), which category the target came from (e.g., if the target word was ‘horrible’ and the attribute label ‘unpleasant’ was in the right-hand corner, then participants should have pressed the right-hand key). The first two blocks of trials involved words and photographs from just one of the categories. Block 3 was a practice block for the use of both sets of categories. Block 4 was the first of the critical blocks of trials in which target words/photographs came from both categories and both sets of attribute and category labels appeared on the screen. Block 5 used just a single category set but the position of the category labels was switched, to control for effects of hand dominance and practice (e.g., if ‘overweight’ had been in the top right hand corner of the screen in the previous blocks it was now in the top left hand corners). The label positions were only switched for one of the category sets and it was this set that was used in Block 5. Block 6 was again a practice block using both category sets (with the switched positions established in Block 5). Block 7 was the second critical block of trials, identical to Block 4 except for the switching of one of the category labels. On all trials, the first response made (L or A key) and the speed to make that response was recorded. After a correct response, a green tick appeared on the screen below the target word and the screen was then blank for 200 milliseconds before the next target appeared. If participants made an incorrect response, a red cross appeared below the target word and participants were required to make the correct response before proceeding to the next trial. The number of trials in each block was 18, 18, 36, 72, 18, 36 and 72, respectively from blocks one to seven.

³ It is acknowledged that the average weight and healthy weight may not be synonymous. However, it is likely that an individual perceived to be of average weight is likely to be in the healthy weight range as defined by the World Health Organisation (World Health Organization, 2007).

Cognition-based Measures

Stroop Task - A PC version (Boettcher, 2005) of a modified Stroop task was used as an implicit measure of stereotypes. The original Stroop task (Stroop, 1935) was based on the premise that activation of semantic meaning is an automatic response when reading and therefore is difficult to inhibit. In the original experiment, participants were presented with coloured squares or names of colours written in different coloured ink (e.g., the word 'blue' written in red ink). The participants' task was to correctly identify the colour of the square or the colour the word was written in. The robust result in the Stroop task is that people are slower at identifying the colour in which a word is written, compared with identifying the colour of the coloured squares. It is argued that the automatic activation of semantic meaning of the target words (i.e., colour words) interferes with the naming of the ink colour and hence leads to slower identification times. The modified Stroop task is based on the premise that participants would find it more difficult (and therefore make slower responses) to identify the ink colour of words for which the words' semantic associations have been activated (Gollwitzer & Schaal, 1998; Kawakami et al., 2000). That is, the greater the level of activation of the semantic associations of a word, the greater the amount of processing resources is required to inhibit the semantic meaning of the word, which therefore slows down the identification of the ink colour of the word. For example, if a participant is presented with a word corresponding to a stereotype of the target category and the stereotype has been activated, the response time for identifying the colour of the ink in which the word had been written in is assumed to be slower than when the participant is presented with word which semantic associations have not been activated.

The participant was presented with words from three categories; stereotype consistent (*ugly, greedy, dirty, lazy* and *disgusting*), stereotype inconsistent (*fit, beautiful, organised, active* and *clean*), and stereotype irrelevant (*economical, rude, artistic, musical* and *boring*) words. The words were chosen as a result of pilot tasks. The first pilot task involved 17 female participants completing a free response questionnaire that asked the participant to generate adjectives of thin, obese and average sized individuals (the questionnaire is shown in Appendix B). Adjectives that were mentioned in more than one category were removed. Adjectives that were mentioned by three or more participants were chosen for the second pilot task, in which a different group of 17 female participants were asked to rate each of the adjectives on how characteristic they were of thin, obese and average sized individuals on a five-point Likert-type scale (the questionnaire is shown in Appendix C). Differences in the ratings of the adjectives between the three categories (thin, obese and average sized) were then calculated and adjectives that were strongly associated with one category, but not the others, were chosen for the present study. Specifically, the stereotype consistent words were strongly associated with the category obese but not with the categories thin or average size, and the ratings between the obese category and the others were significantly different. The stereotype inconsistent words were weakly associated with the category obese but were associated with the categories thin and average size, and the ratings between the obese category and the other categories were significantly different. For the irrelevant word category, the words were not strongly associated with any of the categories and were not rated as significantly different between the categories. The mean ratings for each of the adjectives used in

the present study for each of the categories are shown in Table 1. The full set of results is shown in Appendix D.

Table 1: Mean Ratings for the Stereotype Consistent, Stereotype Inconsistent and Stereotype Irrelevant Words between the Three Target Categories.

Words	Obese	Thin	Average size
Stereotype consistent			
Lazy	4.06	1.94	2.41
Disgusting	3.06	2.29	2.06
Ugly	3.47	2.24	2.12
Greedy	3.24	2.24	2.24
Dirty	2.94	1.94	2.18
Mean rating	3.35	2.13	2.20
Stereotype inconsistent			
Active	1.47	4.06	3.65
Clean	2.41	3.82	3.65
Fit	1.59	4.06	3.88
Beautiful	2.24	3.41	3.59
Organised	2.47	3.76	3.24
Mean rating	2.22	3.82	3.60
Stereotype irrelevant			
Artistic	2.88	3.12	2.88
Rude	2.71	2.71	2.47
Economical	2.60	2.70	2.95
Boring	2.55	2.65	2.65
Musical	2.85	2.70	2.80
Mean rating	2.72	2.78	2.75

Each category (stereotype consistent, stereotype inconsistent and stereotype irrelevant) consisted of five words and each word was presented eight times, twice in each of the four colours; red, yellow, blue and green. Altogether then there were 120 trials. The words (Arial Regular font, 36 font size) appeared individually in the middle of a 19 inch computer screen. The participant was asked to press an allocated key on the keyboard to indicate the ink colour in which the word was written in. Key Z corresponded with the colour yellow, key C corresponded with the colour green, key B corresponded with the colour red, and key M corresponded with the colour

blue. The response keys had corresponding coloured labels attached to them. The response times and error rates were recorded for each trial.

Lexical Decision Task (LDT) – A modified version (Walton, 2002) of the Lexical Decision Task (LDT; Meyer & Schvaneveldt, 1971) was used as the second cognitive-based measure. The participant's task on the LDT is to rapidly decide whether a string of letters is a word or a non-word. The task is based on the principle that people will find it easier (and therefore make faster responses) to make the categorisation decision (word/non-word) with words that have their semantic associations activated. In the present study, the target words came from three categories: stereotype consistent, stereotype inconsistent and stereotype irrelevant. The words used in the consistent, inconsistent and irrelevant categories were identical to those used in the Stroop task. All non-words were pronounceable and were matched on the number of characters in the stimuli words. The non-words were chosen from a list of non-words used in previous research (Neumann & Russell, 2001), with the exception of four non-words that were created by the researcher as the letter length of four words did not match any from the existing non-word list. The words and non-words are shown in Appendix E. All the information for the task appeared on the computer screen, instructing the participant that she was to complete a word-speed task and asking her to complete the task as quickly and as accurately as possible. The participant completed eight practice trials (including four words and four non-words) which did not include any of the words used in the critical trials (the practice words/non-words are also shown in Appendix E). A cross appeared in the middle of the screen as a warning signal for 500 milliseconds, followed by the stimulus. The participant was not given feedback on their responses and the word

string remained on the screen until a response was made. The responses were made with an L key (word) or an A key (non-word). Each of the targets appeared four times, resulting in 120 trials (five words each of stereotype consistent, inconsistent and irrelevant words, matched with 15 non-words), presented in unique random order for each participant. Reaction times to incorrect and correct responses were recorded.

Procedure

Participants were invited to take part in a study, titled “Word and picture categorisation under time pressure”. The participants were tested individually. On arrival to the laboratory, the participant was greeted by a healthy weight female experimenter and allocated to either a control or an experimental group. The participant was provided with an Information Sheet outlining the purpose of the study (Appendix F). For the control group, the Information Sheet described a study titled “Word and picture categorisation under time pressure”. After signing a consent form, the control group participant first completed the stereotype measures (stereotype measure order counterbalanced between participants), followed by the attitude measures (attitude measure order counterbalanced between the participants). The stereotype measures were always completed first as the affect-based measures are likely to alert the participants to the actual purpose of the study. For the experimental group, the Information Sheet described a study titled “Categorising body shapes and words under time pressure”. The participant was further informed that the investigating people’s attitudes and beliefs about overweight people and how people are able to control their biases. Specifically, the participant was told:

“As mentioned in the information sheet, this research is investigating the categorisation of people with different body shapes. More specifically, in this study we are looking at the attitudes people have toward individuals who are overweight. People make assumptions, both positive and negative, based on physical appearance – this is quite normal and expected.

What I’d like for you to do is to try to complete two computerised tasks while trying to be as bias-free and fair as possible. Try not to base your responses on either your positive or negative reactions to individuals who are overweight. That is, try to respond to all the trials in the same way, regardless of the picture or the word presented. I know this is a very difficult to do because of the time pressure, but just do your best”.

The participant was first asked to complete “word/speed tasks” (i.e., Stroop and LDT; order counterbalanced across participants), to get a baseline of their computer speed and ability. After completing the Stroop and the LDT, the participant was reminded of the above instructions, that is, trying to be as fair and bias-free when responding. The participant then completed the attitude measures (GNAT and IAT) in a counterbalanced order.

Following the attitudinal measures, all participants were thanked, debriefed and paid a \$5 gift voucher. The debriefing sheet is shown in Appendix G. The study was reviewed and approved by the University of Canterbury Human Ethics Committee.

Results

Data preparation

GNAT - The GNAT data analysis was conducted following the recommendations by Nosek and Banaji (2001). The analysis is based on Green and Swet's (1966) signal detection theory, which uses d' as a measure of accuracy (i.e., sensitivity) of the participants' ability to discriminate between target items (e.g., when the category is 'overweight' and a picture of an overweight individual is shown) from distracter items (e.g., when the category is 'overweight' and a picture of an average sized individual is shown). A higher d' indicates higher sensitivity for discriminating targets from distracter items, and the difference between the incongruent and congruent blocks is taken as the measure of bias. Difference scores were calculated between the congruent and incongruent blocks so that a positive d' indicates higher sensitivity in the congruent than in the incongruent block (i.e., stronger association between 'overweight' and 'unpleasant' than 'overweight' and 'pleasant'). A negative d' indicates a higher sensitivity in the incongruent than in the congruent block.

IAT - The Implicit Association Test scores were calculated using a method recommended by Greenwald, Nosek and Banaji (2003). A positive IAT indicates an implicit association between overweight and unpleasant and between healthy weight and pleasant. A negative IAT score indicates an implicit association between healthy weight and unpleasant and between overweight and pleasant. The larger the IAT score, the stronger the implicit association, that is, a large positive IAT score would indicate a strong association between overweight and unpleasant, and healthy weight and pleasant.

The Stroop task - For the Stroop task, to counter the problem of positively skewed data, often a problem with reaction-time based measures, \log_{10} transformation was applied to the data, but raw reaction times are presented for ease of interpretation. With using only the correct responses, each participant's mean response times for stereotype consistent, stereotype inconsistent, and stereotype irrelevant words were calculated.

LDT – As with the Stroop task, the reaction times for the responses were \log_{10} transformed. All incorrect responses were removed from the analysis and the responses faster and slower than three standard deviations from the participant's mean were also removed. Mean reaction times were then calculated for the stereotype consistent words, stereotype inconsistent words and for the stereotype irrelevant words.

The mean sensitivity scores for the Go/No-Go Association Task, the mean IAT effects, the mean reaction times for the Stroop Task and the Lexical Decision Task, as a function of condition, are shown in Table 2. The Stroop and Lexical Decision Task data were analysed using \log_{10} transformation but are presented as raw reaction times for the ease of interpretation.

As the participant's BMI did not influence any of the dependent variables, the factor was not considered further. In addition, as the block order for the GNAT and the IAT

did not show any meaningful effects, block order is not considered further in the analysis⁴.

Table 2: The Mean Sensitivity Scores (d') for the Go/No-Go Association Task, the Mean IAT Effects, and the Mean Reaction Times for the Stroop Task and the Lexical Decision Task, as a Function of Condition.

Measure	Experimental	Control
	<i>Mean (sd)</i>	<i>Mean (sd)</i>
GNAT - congruent d'	2.53 (0.91)	2.91 (0.65)
GNAT – incongruent d'	1.47 (0.80)	2.20 (0.78)
GNAT – difference score	1.06 (0.87)	0.72 (0.72)
IAT	0.51 (0.51)	0.55 (0.41)
Stroop		
Congruent (ms)	674 (1189)	693 (1221)
Incongruent (ms)	664 (1181)	697 (1247)
Irrelevant (ms)	668 (1190)	726 (1232)
LDT		
Consistent (ms)	582 (1159)	560 (1112)
Inconsistent (ms)	565 (1160)	551 (1110)
Irrelevant (ms)	585 (1162)	580 (1124)

Note. GNAT = Go/No-Go Association Task; IAT = Implicit Association Test; LDT = Lexical Decision Task.

Affect-based attitudes: GNAT

Due to computer malfunction during one participant's assessment, the GNAT analysis included only 29 participants.

⁴ A significant main effect of IAT block order was found such that the participants showed stronger bias against overweight, relative to healthy, weight individuals when the congruent block was done first. As the finding was not central to the focus of the pilot study, it was not considered in the main analysis. However, the block order of the IAT is counterbalanced in the main studies to account for this effect.

For the ease of interpretation and comparability with the IAT (below), difference scores between the congruent and incongruent block sensitivity scores were calculated, where a higher difference score indicated more bias towards overweight individuals. Single sample t-tests were computed to test whether there was significant bias on the GNAT. Bias scores in each condition were compared to zero (i.e., no bias). Significant bias was found for both conditions (Control, $t(13) = 3.75, p < .01$; Experimental, $t(14) = 4.68, p < .05$).

A 2 (Condition: control/explicit instructions) x 2 (Measure order: GNAT/IAT first) ANOVA was conducted on the GNAT difference scores. A significant condition by measure order interaction was found, $F(1, 24) = 6.48, p < .05, \eta_p^2 = .21$; see figure 1. Post hoc tests (Tukey, $p < .05$) on the interaction showed no significant differences as a function of condition or measure order.

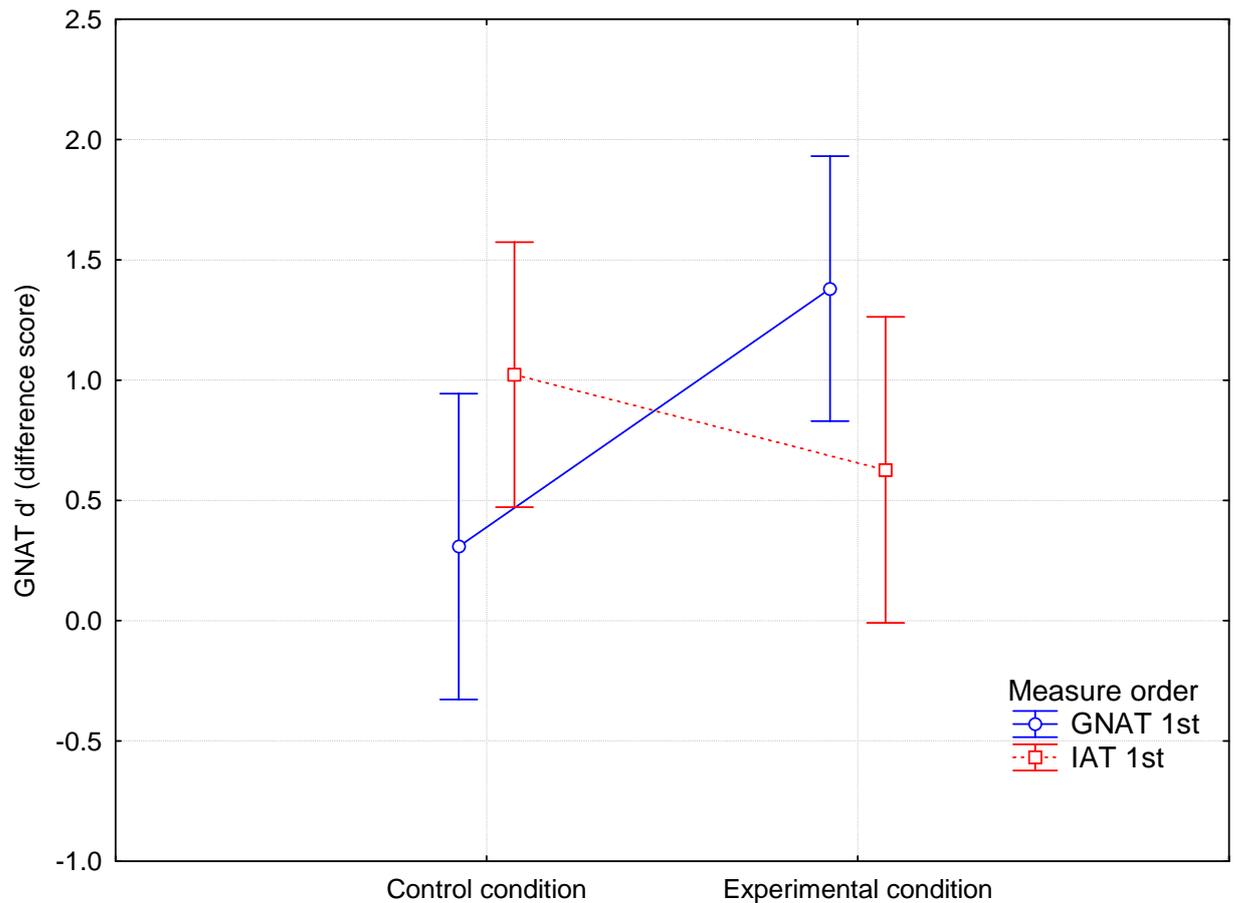


Figure 1: The GNAT d' difference scores as a function of condition and measure order.

Affect-based attitudes: IAT

Due to computer malfunction during one participant's assessment (different to the participant excluded from the GNAT), the IAT analysis included only 29 participants.

The mean error rates were $< 10\%$ and similar to those in previous studies but are not considered further here.

Single-sample t-tests were computed to test whether there was significant bias on the IAT. Bias scores in each condition were compared to zero (i.e., no difference in

general affect toward overweight and healthy weight individuals). Significant bias was revealed for both groups (Control, $t(14) = 5.18, p < .05$; Experimental, $t(13) = 3.70, p < .05$).

In addition, a 2 (Condition: control/experimental) x 2 (Measure order: GNAT/IAT first) ANOVA was conducted. A significant interaction of condition by measure order was found, $F(1, 25) = 4.37, p < .05, \eta_p^2 = .15$; see figure 2. Post hoc tests (Tukey, $p < .05$) showed no differences as a function of condition or measure order.

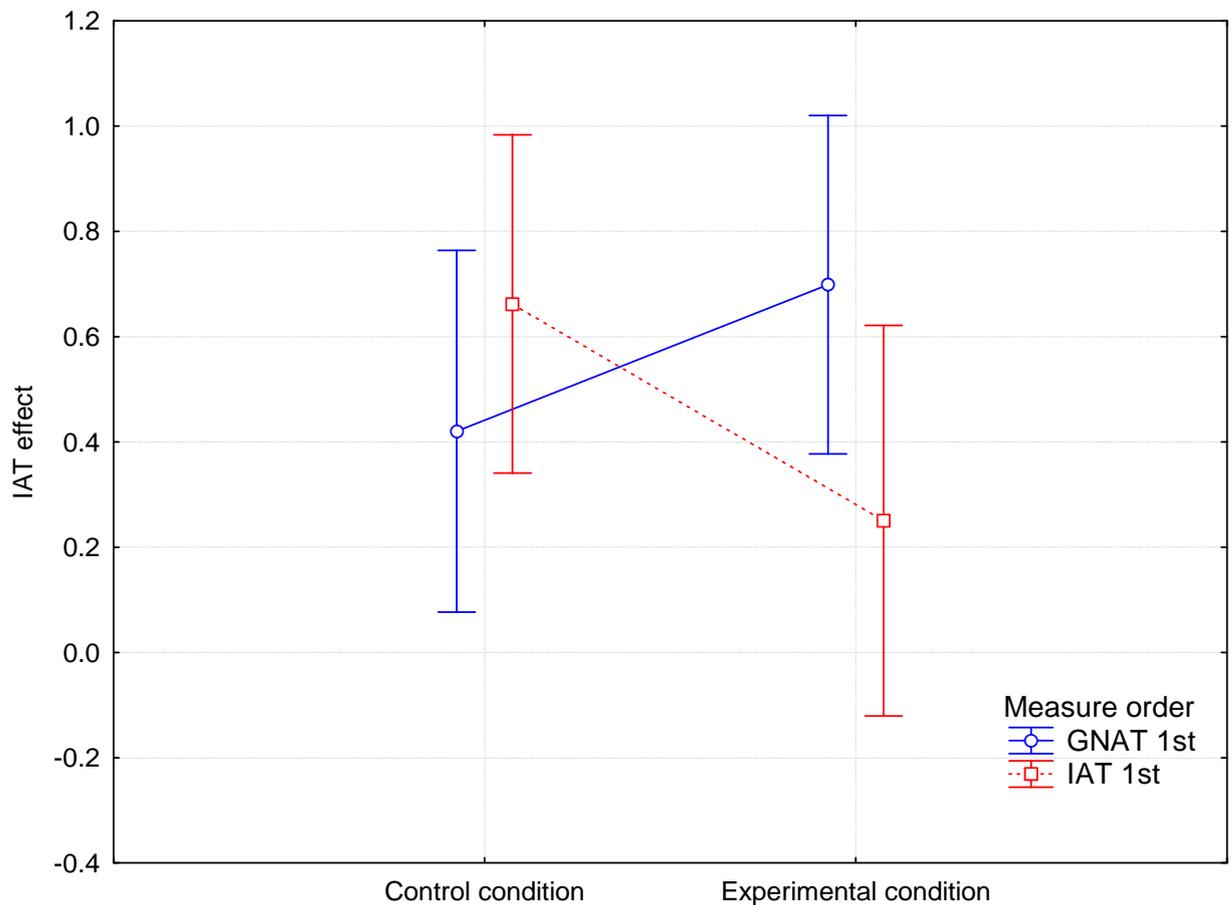


Figure 2: The IAT effects as a function of condition and measure order.

Cognition-based attitudes: The Stroop task

The mean error rate for the Stroop task was 5.8%, comparable to previous studies (e.g. Kawakami et al., 2000).

A 2 (Condition: experimental/control) x 2 (Measure order: Stroop/LDT first) x 3 (Words: stereotype-consistent/-inconsistent/-irrelevant) ANOVA with repeated measures on the final factor revealed no significant effects.

Cognition-based attitudes: The Lexical Decision Task (LDT)

Due to computer malfunction during one participant's assessment (different to the participant on the IAT and GNAT), the LDT analysis included only 29 participants.

The mean error rate for the LDT was 1.6%, comparable to previous studies (Wittenbrink et al., 2001a).

A 2 (Condition: explicit instruction/control) x 2 (Measure order: Stroop/LDT first) x 4 (Words: stereotype-consistent/-inconsistent/-irrelevant) ANOVA was conducted with repeated measures on the final factor. A significant main effect of word types was found, $F(2, 50) = 3.83, p < .05, \eta_p^2 = .13$, such that the irrelevant words were responded to significant slower as compared with the stereotype consistent and inconsistent words ($M_s = 582\text{ms}$ vs. 571ms consistent and 559ms inconsistent).

Discussion

The present pilot study was conducted to determine whether affect- or cognition-based implicit measures would be used in the main studies, and further, which of the two options of implicit measures would be carried forward. In addition, initial investigation into the malleability of implicit attitudes was included, specifically, the impact of explicit instructions to avoid bias when responding on the attitude measures.

The pilot study's results showed that implicit bias towards overweight individuals (relative to healthy weight, in the case of the IAT) was evident on both of the affect-based measures but that there was no evidence of stereotype activation in either of the cognitive-based measures.

Due to the results of the pilot study, where clear implicit bias was evident in both of the affect-based measures, the main studies proceeded with a measure of implicit affect-based evaluations. Further support for the decision to continue with the affect-based measures comes from past research, as literature suggests that evaluative measures can be a better predictor of behaviour compared with stereotype measures (Dovidio, Brigham, Johnson, & Gaertner, 1996; Stangor, Sullivan, & Ford, 1991). For example, Bessenoff and Sherman (2000) found that their prejudice measure predicted behaviour towards obese people, whereas the stereotype measure did not. It is acknowledged however that research does not univocally support this proposition. For example, Rudman et al. (2001) found that diversity education was effective in reducing sex bias with both implicit measures of prejudice and stereotypes.

Although the results of the present study showed negative attitudes towards overweight individuals on both the GNAT and the IAT, it was decided to use the IAT in the main studies of the research. This decision was based on the context of the main research. In investigating implicit biases towards older individuals in a workplace setting, it is assumed that in many situations older workers would be compared to other, such as younger, workers rather than being considered in isolation. Further, age-based discrimination is evidenced by the differential treatment of one group (i.e., older workers) relative to another group (i.e., younger workers). For example, in hiring decisions, employers are likely to be faced with numerous job applications, some which may be from younger and others which may be from older candidates. Consequently, a comparison will be made between younger and older job candidates. The comparative nature of such a decision can be applied to most Human Resources related decisions, such as promotions and redundancies. Due to this comparative nature of various organisational decisions, the IAT was chosen as a method of measuring implicit biases, as it is a relative measure between two opposing categories, in this case, older and younger workers.

Furthermore, the IAT has been widely used in research literature. The IAT can be easily modified to measure various attitude domains, has been showed to show large effect sizes and has been showed to have predictive utility (D. M. Amodio & Devine, 2006; De Houwer, 2003; Greenwald et al., in press; McConnell & Leibold, 2001).

The other goal of the pilot study was to investigate the impact of a simple, easy to implement, explicit instruction to avoid biases on the malleability of the implicit attitudes. Using the explicit instructions also was deemed to have similarities with the

types of methods that are likely to be used in training individuals to avoid biases in Human Resource-related contexts. In such training, the existence of stereotypes is often alluded to and that they should be avoided (Borman, 1990 for review). As discussed in the Introduction section, such overt manipulations to avoid bias have been used relatively rarely and mixed results have been found in past research (Froni & Mayr, 2005; Lowery et al., 2001). The present results showed no evidence of the experimental manipulations influence on any of the implicit measures. The pilot study therefore showed that another intervention is necessary to investigate the malleability effect. Therefore, an intervention based on interventions used in past research (successfully manipulating implicit bias) was devised for the main studies.

Study 1

As discussed in the Introduction section, implicit measurement of attitudes has gained much interest in the past two decades. Most of this research has focused on attitudes in the domains of race and sex, while age has received much less attention (with some notable exceptions, e.g., Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001; Levy & Banaji, 2002; Perdue & Gurtman, 1990). The lack of research on implicit ageism is somewhat surprising considering the importance of the information that a perceiver derives from perceptions of age (Brewer, 1988). Furthermore, discrimination based on age is well established in the workplace and in other contexts (Angus & Reeve, 2006; Gray & McGregor, 2003; Ragan & Bowen, 2001; M. Wilson & Kan, 2006) and in the light of the ageing population and subsequently, the ageing workforce, the potential for discrimination based on age is likely to increase. Although some research has investigated attitudes towards older workers on the explicit level (e.g., McGregor & Gray, 2002), no research has investigated implicit ageism in the context of the workplace.

The following section will discuss the concept of implicit ageism and describe Study 1. The purpose of the study was to extend the research of implicit attitudes research to a novel social category, namely older workers, and to investigate the potential malleability of such attitudes.

Ageism and the ageing workforce

As discussed in the Introduction section, ageism has been widely documented (Wilson & Kan, 2006; EEO Trust, 2000a; Lyons, 1998; Steinhauser, 1998). The importance of investigating ageism at present time has been highlighted by the ageing population and subsequently, the ageing workforce. Unfortunately, numerous negative beliefs about older workers exist (Arrowsmith & McGoldrick, 1996; Finkelstein et al., 1995; Steinhauser, 1998), and discriminatory practices have been widely documented (Arrowsmith & McGoldrick, 1996; Equal Employment Opportunities Trust, 2000a; Finkelstein et al., 1995; Hirsch, Macpherson, & Hardy, 2000; McMullin & Marshall, 2001; Salthouse & Maurer, 1996; M. Wilson & Kan, 2006).

With such negative outcomes for older workers, more research into the area of ageism has been called for (Glover & Branine, 1997; B. A. Richardson, 2007). One of the contributing factors to the persistence of age discrimination may be that people are not necessarily aware of their biases towards older individuals, and further, that such implicit biases may be stronger than their explicit counterparts. That is, it is possible that ageism towards older workers may also operate implicitly.

Implicit ageism

Research has recently investigated *implicit* ageism (Dasgupta & Greenwald, 2001; Levy, 1996, 2001; Levy & Banaji, 2002; Levy, Hausdorff, Hencke, & Wei, 2000; Perdue & Gurtman, 1990), defined as the “feelings towards the elderly that exist and operate without conscious awareness, intention, or control” (Levy & Banaji, 2002, p. 51). Recent research has indeed found a strong implicit bias against older individuals

(Dasgupta & Greenwald, 2001; Levy, 1996, 2001; Levy & Banaji, 2002; Levy et al., 2000; Perdue & Gurtman, 1990). Implicit ageism has even been suggested to be more common than implicit sexism or racism (Banaji, 1999, cited in Levy, 2001).

While implicit ageism has received some attention recently, research is yet to address the area of implicit ageism in an employment context. Due to the changing characteristics of the workforce, this research is highly topical. Not only can implicit ageism hinder the potential of older workers, but such bias may also influence organisations. In the current climate of skill shortages, employing older individuals is not only a necessity but also makes good business sense (Loretto & White, 2006). It is therefore important to understand the nature of people's implicit attitudes towards older workers, particularly as previous research has shown a relationship between implicit attitudes and behaviour (Greenwald et al., in press). Furthermore, it is important to investigate how stable such attitudes are in order to gain understanding of the ways in which the potential negative bias could be alleviated.

The present study therefore extended the implicit ageism research into the area of employment. To further understanding of the antecedents of age discrimination in employment, the present research investigated implicit attitudes towards older, relative to younger, workers. The malleability of such attitudes was investigated using a mental imagery intervention. Specifically, the participants in the experimental condition were asked to describe valued and respected older workers from their surroundings (further details in the Method section). As determined by the Pilot study, the present study employed the Implicit Association Test (IAT; Greenwald et al., 1998) as an implicit measure of attitudes. Consistent with past research on older

individuals in general (Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001), it was expected that the participants would show negative implicit attitudes towards older, relative to younger, workers. Further, it was expected that the participants in the experimental condition would show a reduction in negative attitudes as a function of the mental imagery intervention, compared to the control group.

Method

Participants

Fifty students (14 male) from the University of Canterbury volunteered to participate in the study in return for a \$5 gift voucher. The participants' ages ranged from 17 to 39, with a mean of 21.5 years. The participants were randomly assigned to a control or an experimental condition.

Measures

Implicit Association Test (IAT) – Implicit attitudes towards older, relative to younger, workers were measured using the IAT, as described in the Pilot study. The target categories were 'older worker' and 'younger worker' and the attribute categories were 'good' and 'bad'.

Twenty coloured images of individuals in a work environment were selected from a real-life image category of the Microsoft Office Clip Art site ([http:// office, Microsoft.com](http://office.microsoft.com)). There were 5 images from each of 4 categories – older males; older

females; younger males; younger females – and pilot testing with 13 students confirmed that the mean estimated age for each image fell within the intended ranges of 45-65 years for older workers and 25-35 years for younger workers. Within each group of 5 photographs, 4 of the targets were looking forward and 1 to the side and 4 were smiling and 1 displaying a neutral expression. Each photograph was adjusted to meet the requirements of the IAT program (Walton, 2003) of 220 x 250 pixels. The images are shown in Appendix H. The attribute words were identical to those in the pilot study (Good: *Wonderful, Marvellous, Glad, Excellent, Loving, Splendid, Beautiful, Fabulous, Pleasant, Paradise*; Bad: *Nasty, Horrible, Dislike, Tragic, Painful, Angry, Terrible, Unpleasant, Disaster, Hate*).

Twelve students (not involved in the main study) completed the IAT task to check that the instructions were clear and that the program was operating as intended. All participants reported the task as easy to follow and so no changes were made. In addition, the mean IAT score for this pilot group of participants showed a significant bias toward older, relative to younger, workers ($M = .46$, $SD = .32$), as expected and the mean error rate (6.1%) was comparable to that of previous IAT research (Greenwald et al., 1998).

Experimental manipulation – A mental imagery manipulation was developed for the present study using a combination of two interventions used in past research (Dasgupta & Greenwald, 2001; Blair et al., 2001).

Dasgupta and Greenwald (2001) showed that exposure to counter-stereotypical examples of a category reduced the participants' negatively biased implicit (race and

age) evaluations. Specifically, the participants were provided with positive examples of the minority group (African Americans/Elderly) and negative examples of the majority group (White Americans/Young people). Such exposure was found to lead to a reduction in the participants' IAT effects (i.e., less negative bias towards African Americans/the Elderly relative to White/Young people). Importantly, this effect was found to endure for 24 hours after exposure to the examples (investigated with race evaluations only).

The second intervention of interest was devised by Blair, Ma and Lenton (2001). Blair and colleagues used a mental imagery intervention as a method for reducing implicit sex stereotypes. Specifically, the participants in the experimental condition were asked to think of questions such as what a strong woman is like and why she is considered strong. The participants in the control condition were asked to think about what a vacation in the Caribbean would be like. The participants in both conditions were also asked to describe their thoughts in a short paragraph. The results showed that the participants in the experimental condition showed less implicit sex stereotyping (as measured by the IAT) as compared with the participants in the control condition.

The intervention used in the present research made use of the two above discussed manipulations, that is, counter-stereotypical mental imagery and exposure to counter-stereotypical examples of target group. However, in the present study, the participants were instructed to imagine specific individuals from the target category (i.e., older workers) that they knew or were aware of. Rather than being presented with specific examples, the participants were asked to generate the examples of the target category

themselves. This ensured that the intervention can easily and effortlessly be replicated in different situations (e.g., in organisational initiatives) and used regardless of the target group in question.

Specifically, the participants in the experimental condition were given the following instructions:

“Please name three respected and valued older workers from your surroundings (typically in the workplace, older workers are considered individuals above the age of 45). Take your time with thinking about these people and write their names down (if you know them, otherwise write a brief description, such as “my neighbour”, “friend” etc.) on the paper provided. Remember that this information will remain confidential and will be deleted at the end of the study.

Once you have written the names (/ descriptions) down, please indicate, in your own words, why you consider these individuals to be valued and respected. Spend a few minutes on each person. You do not have to complete the descriptions in any particular order and you may go back and forward between the descriptions. Remember to take your time”.

To ensure consistency of tasks between the experimental and the control groups, the control group participants were also asked to take part in an imagery task. However, instead of describing older workers, the participants were asked to describe holiday

destinations they would like to visit. Specifically, the participants in the control condition were given the following instructions:

“Please name three holiday destinations you would like to visit. Take your time with thinking about these destinations and write the location names down (if you know them, otherwise write a brief description, such as “island in the Pacific” or “city in France” etc.) on the paper provided.

Once you have written the names (/descriptions) down, please indicate, in your own words, why you would like to visit these destinations. Spend a few minutes on each destination. You do not have to complete the descriptions in any particular order and you may go back and forward between the descriptions. Remember to take your time”.

Procedure

Participants were invited to take part in a study, titled “Word and picture categorisation under time pressure”. On their arrival to the laboratory, each participant was randomly allocated to either an experimental or a control group, and provided with an Information Sheet outlining the purpose of the study (see Appendix I). After signing a consent form, the participant was given the imagery instructions relevant to their condition, both verbally and in writing. The experimenter left the room for approximately five minutes, within which the participant completed the imagery task. Once the imagery task was completed, the participants completed the IAT. The order of IAT blocks (congruent or incongruent blocks first) was counter-

balanced across participants. Finally, the participant was debriefed and given a \$5 gift voucher for their participation. The debriefing sheet is shown in Appendix J.

The study was reviewed and approved by the University of Canterbury Human Ethics Committee.

Results

The IAT data was analysed using the improved algorithm recommended by Greenwald et al. (2003). A positive IAT score represents a more positive evaluation of the younger, relative to the older workers, and a negative IAT score a more positive evaluation of the older, relative to younger, workers. The higher the number in either direction, the stronger the evaluation.

Preliminary analyses revealed no effects of participant sex, age or IAT block order on the IAT scores and hence these variables are not considered further.

An independent sample t-test revealed no effect of the error rate on the IAT ($M_s = 7.88\%$ and 7.02% for the experimental and control groups respectively). The error rates are comparable to those of previous studies and will not be considered further (e.g., Blair et al., 2001; Karpinski & Hilton, 2001).

An independent sample t-test revealed no significant difference in the IAT scores between the experimental and control groups, although means were in the expected direction ($M_s = .28$ and $.37^5$, for the experimental and control groups respectively).

Additional single-sample t-tests were computed to test whether there was significant bias on the IAT. The mean IAT effects in each condition were compared to zero (i.e., no difference in general affective responses toward between older and younger workers). Significant bias was revealed for both conditions (Control $t(24) = 6.88, p < .001$; Experimental $t(24) = 4.81, p < .001$).

Discussion

The present study investigated implicit attitudes towards older, relative to younger, workers. In addition, the malleability of implicit attitudes was investigated with the use of a mental imagery exercise, where the experimental group participants were asked to describe three valued and respected older workers from their surroundings.

As expected, the participants showed negative implicit attitudes towards older, relative to younger, workers. Such an effect is consistent with past research showing negative implicit attitudes towards older individuals in general (Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001; Perdue & Gurtman, 1990). The present study extended implicit attitude research into the context of employment, and showed that in addition to the documented explicit negative attitudes towards older workers (e.g., McGregor & Gray, 2002), such attitudes are also evident at implicit level.

⁵ The effect size for this difference was small.

Although the expected pattern of attitude malleability was found as a function of the mental imagery intervention, the difference between the experimental and control group participants' IAT effects did not reach statistical significance. This was an unexpected finding in light of previous research, which has found implicit attitude malleability in the context of older individuals in general. One possible explanation for the lack of a significant effect of the malleability manipulation is the participant sample used in the present study. The participants in the study were university students from various disciplines. It is therefore likely that the participants in the sample were not familiar with employment related issues and could have potentially been less motivated in their efforts during the mental imagery task.

It is therefore important to investigate whether the same pattern of results is observed with a sample of participants to whom employment related issues would be more relevant and familiar. Study 2 therefore used a sample of Management students who were likely to have an interest in workplace and employment-related issues in general. An additional reason this particular sample of students was chosen was that it is likely that these individuals will move into Human Resource Management (HRM) roles after completing their studies, and are therefore going to deal with employment related situations with younger and older workers. Further, at the time of participating, all participants would have had some experience with recruitment and selection procedures and practices, if not practically at least theoretically. Therefore, the Management students are likely to have both more knowledge and increased interest in employment-related issues than university students from various disciplines.

Study 2a

Study 1 found evidence of negative implicit attitudes towards older, relative to younger, workers. Study 2a aimed to replicate this finding, using a sample of participants with more experience in the relevant attitude domain. Accordingly, Management students, who were likely to be more familiar with employment related issues than other university students (as used in Study 1), were recruited as participants for the present study. Due to such familiarity with the relevant target groups, it was expected that the participants would be more able to partake in the mental imagery intervention.

In addition to implicit measures of attitudes, investigating people's attitudes via explicit measures of attitudes is also imperative as such attitudes have been found to be predictive of people's behaviour (Greenwald et al., in press; McConnell & Leibold, 2001; Nosek, Banaji, & Greenwald, 2002b; Poehlman et al., 2004).

Information on explicit attitudes is therefore vital in order to better understand the barriers older workers face in employment. Furthermore, gaining such information is hoped to inform decision makers in the development of more effective policy to counter age discrimination in employment. Study 2a hence investigated attitudes with both implicit and explicit measures. It was expected, based on past research, that the types of measures would not be strongly related. In addition, as individual differences in motivation have been found to play a part in the manner with which individuals respond to attitude measures and experimental interventions, the participants' motivations to respond without bias were also investigated. Finally, attitudes were measured at two separate occasions, in order to gain a more direct, sensitive

assessment of the potential attitude malleability as a function of the mental imagery intervention.

Explicit attitudes towards older workers

In contrast to the scarcity of implicit attitude research in the context of the workplace, perceptions of older workers have previously been investigated with explicit attitude measures. In an early study, Rosen and Jerdee (1976) investigated employment-related age stereotypes by asking participants to rate how descriptive 65 characteristics were of a 30-year old man and of a 60-year old man. In the areas of performance (e.g., motivation and efficiency) and potential for development (e.g., being ambitious and adaptable), the younger man was rated significantly higher than the older man. In contrast, the older man was considered to have more stable characteristics (e.g., being trustworthy and honest). Similar results were found in a more recent New Zealand-based study. Employers and employees agreed that older workers are likely to be reliable and loyal, but that they are also likely to be inferior performers and less ambitious than their younger counterparts (Gray & McGregor, 2003). McGregor and Gray (2001) also found that when a reason for not employing an older individual was provided (rarely was justification for the decision given), some employers explained to the candidate that they were too old for the position or that they would simply prefer younger employees. It is noteworthy that discrimination based on age is legislated against in New Zealand (as in many other countries, including the US and the UK) (Human Rights Act, 1993), making discrimination based on age not only detrimental to older workers, but also illegal.

As discussed in the Introduction section, the results of belief and attitude-based measures are often compromised by surrounding social norms. Yet the above-mentioned research illustrates that people may be willing to express some negative perceptions of older workers. However, as many of these beliefs are not supported by research evidence (e.g., younger workers being more productive than older workers), it is important to understand people's explicit attitudes, particularly as they have been found to influence behaviour (Greenwald et al., in press; Nosek et al., 2002b). The present study therefore investigated explicit attitudes towards older workers in addition to implicit attitudes. This allowed also for the relationship between implicit and explicit attitudes to be investigated. As Study 1 indicated the negative attitudes towards older, relative to younger, workers exist on the implicit level and recent New Zealand based research has found some evidence for people's willingness to express negative beliefs about older workers (McGregor & Gray, 2002), it was expected that a positive relationship would be found between implicit and explicit attitude measures. The relationship was not expected to be strong however, as previous research investigating both implicit and explicit attitudes towards older individuals has found nonsignificant or weak relationships between implicit and explicit measures of attitudes (Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001). It is noted however that as the attitudes towards the two groups (older individuals and older workers) cannot be assumed to be alike, no strong expectations were made on the strength of the relationship.

Malleability of explicit attitudes

As discussed in the Introduction section, the traditional view of attitudes suggests that explicit attitudes are more contextually dependent as compared with implicit attitudes

(e.g., Nosek, 2005). Implicit attitudes have been thought to develop throughout a person's lifetime, and due to such a long socialisation process, it is expected the implicit attitudes are relatively immutable to contextual variations (e.g., Devine, 1989). Explicit attitudes, on the other hand, have been thought of as more recently acquired evaluations, and therefore more susceptible to change (Bargh & Chartrand, 1999; Greenwald & Banaji, 1995; T. D. Wilson et al., 2000). It is important to acknowledge that a large body of research has focused on changing explicit attitudes with persuasion techniques (Chaiken, 1980; R. E. Petty & Cacioppo, 1986), however, the present research does not focus on persuasion, but rather focuses on a brief contextual manipulation to investigate the potential influence on explicit attitudes. The malleability literature rarely makes claims for permanently changing attitudes. However, as discussed in the Introduction section, implicit attitude malleability can be considered as a positive starting point for a more permanent change (Blair et al., 2001; Dasgupta & Greenwald, 2001). Indeed, some manipulations have been found to last for a period of 24 hours (Dasgupta & Greenwald, 2001; Kawakami et al., 2000).

Limited research has been conducted in investigating the malleability of explicit attitudes towards older individuals in general. Although Dasgupta and Greenwald's (2001) and Karpinski and Hilton's (2001) research found that participants' explicit attitudes toward older individuals, as measured via feeling thermometer scales, were not influenced by experimental interventions, Dasgupta and Greenwald (2001) found some evidence that the semantic differential scale was sensitive to the experimental manipulation (exposure to examples of various admired elderly individuals).

Research in other attitude domains have also found that explicit attitudes can be influenced by experimental interventions (Barden, Maddux, Petty, & Brewer, 2004;

Rudman & Glick, 2001). As explicit attitudes have been found to be contextually variable and as past research using relatively similar interventions to the present research has found some evidence for the influence on explicit attitudes (Dasgupta & Greenwald, 2001), it is expected that the explicit attitudes would become more positive towards older workers as a function of the experimental intervention, that is, by imagining and describing respected and valued older workers.

Individual differences in motivation to respond without bias

Research has shown that individuals differ in the extent to which they are motivated and are able to control the expression of their biased attitudes. There is also evidence to suggest that the individuals' motivation can also influence implicitly measured attitudes (D. M. Amodio, Harmon-Jones, & Devine, 2003; Plant & Devine, 1998; Wyer, 2007). As discussed in the Introduction section, people can feel external pressures to respond in a socially desirable manner when reporting on their attitudes. However, in addition to such normative pressures, the concern with appearing egalitarian can also be directed at oneself (Dovidio & Gaertner, 1986). That is, individual's responses can also reflect their internal (personal) motivations to hold and express more egalitarian views (Plant & Devine, 1998).

In an attempt to separate the two sources of motivation, normative and personal, Dunton and Fazio (1997) developed a Motivation to Control Prejudiced Reactions (MCPR) scale. Although the scale has been successfully used to demonstrate individual differences in motivation, a factor analysis failed to distinguish between the two types of motivation. Following Dunton and Fazio's suggestion that some of the scale items may not have been focused enough to distinguish between the two

types of motivation, Plant and Devine (1998) subsequently developed a scale, which has been shown to reliably measure both people's external (normative) and internal (personal) motivations to respond without prejudice.

The internal and external motivation scales (IMS/EMS respectively) have since been found to influence a variety of effects, including responses on attitude measures (D. M. Amodio et al., 2003; Devine et al., 2002; Lemm, 2006; Plant & Devine, 1998, 2001; Ratcliff, Lassiter, Markman, & Snyder, 2006), susceptibility to training interventions (Peruche & Plant, 2006) and the stereotype rebound effect (Wyer, 2007). Although most research using IMS/EMS have been in the context of racism, recent studies have also applied the measure to other contexts such as sexism (Klonis, Plant, & Devine, 2005) and attitudes towards homosexuality (Lemm, 2006; Ratcliff et al., 2006).

Overall the research evidence shows that particularly individuals' internal motivation plays an important role in responses to attitude measures. Those individuals high in internal motivation have been found to show less bias on both implicit and explicit measures of attitudes (D. M. Amodio et al., 2003; Devine et al., 2002; Lemm, 2006; Plant & Devine, 1998; Ratcliff et al., 2006). In addition, it has been found that the interaction of internal and external motivation to respond without prejudice may also important. This is because individuals high in both internal and external motivation may show different attitudes on implicit and explicit attitude measures (Plant & Devine, 1998). In general, those individuals high in internal and low in external motivation are likely to show less bias on implicit and explicit measures of attitudes (D. M. Amodio et al., 2003; Devine et al., 2002; Lemm, 2006; Plant & Devine, 2001).

Showing less bias on attitude measures has been suggested to be caused by the internally motivated individual's determination to maintain an egalitarian identity that motivates and enables the regulation of bias (Peruche & Plant, 2006). Such a regulation has been considered to be a highly automatised process, and although yet to be fully determined, it is likely that internally motivated individuals are able to preconsciously inhibit the activation of stereotypes (Devine et al., 2002; Kunda & Spencer, 2003). That is, individuals who hold egalitarian views are likely to be able, over time, to internalise such egalitarian norms, and through practice, are able to automatically inhibit the activation of negative attitudes (Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). Importantly, Peruche and Plant (2006) found evidence that internally motivated individuals were more susceptible to a training intervention aimed at eliminating automatic race bias. The susceptibility to the training intervention was attributed to the internally motivated participants' determination to maintain egalitarian identities and therefore being highly motivated in efforts to eliminate all bias (Peruche & Plant, 2006).

As past research has demonstrated that people's motivations are likely to play an important role in individual's responses to attitude measures, the present study measured people's internal and external motivation to respond without bias towards older workers. It was expected that those individuals high in internal motivation would show less bias on both implicit and explicit attitude measures. The interaction of the sources of motivation was also examined. It was expected that those individuals primarily driven by internal motivation would show less bias towards older, relative to younger, workers on both implicit and explicit attitude measures than those individuals primarily driven by external motivations. As there is also some

evidence to suggest that those individuals high in internal motivation may be more able to regulate their implicit biases (D. M. Amodio et al., 2003; Devine et al., 2002; Peruche & Plant, 2006), it was also of interest whether individuals high in internal motivation would be more likely to show attitude malleability as compared with those lower in internal motivation. It is plausible that those individuals high in internal and low in external motivation respond more favourably due to highly internalised processes to avoid bias and are likely to be more effective at regulating their behaviour in different situations (Deci & Ryan, 2000; Koestner, Bernieri, & Zuckerman, 1992).

In sum, Study 2 aimed to replicate the finding from Study 1 that negative attitudes towards older, relative to younger, workers exist in an implicit level. In addition, explicit attitudes towards older and younger workers were also investigated. This study also investigated the malleability of both implicit and explicit attitudes with the mental imagery intervention used in Study 1. It was of interest whether a participant sample of Management students would be more able to imagine and describe valued and respected older workers, due to their familiarity with employment-related domains. Furthermore, the influence of the participants' internal and external motivation to respond without bias on both implicit and explicit attitudes and the potential malleability of such attitudes was investigated. Finally, the study measured both implicit and explicit attitudes at two separate occasions, to gain a more direct, sensitive measure of the potential change in attitudes as a function of the experimental intervention.

Method

Participants

Forty-nine (35 female) Management students from three local tertiary institutions participated in the study in return for a \$5 gift voucher. The participants' ages ranged from 19 to 45 with a mean of 25.4 years. One male participant was excluded from the analysis due to failing to return for the second session. The final sample therefore consisted of 48 participants.

Measures

Implicit Association Test (IAT) - The participants' implicit attitudes towards older, relative to younger, workers were measured using the IAT, as described in Study 1.

Semantic differentials – The participants' explicit attitudes towards older and younger workers were measured with semantic differential scales. The participants were asked to mark a horizontal line (100mm; anchored by polar opposites of an adjective pair) to indicate the extent to which they believed the specified traits were characteristic of younger and older workers in general. The responses were scored from 0 (negative pole) to 100 (positive pole). Each scale was completed separately for older and younger workers. The items were: motivated–unmotivated, flexible–inflexible; productive–unproductive; organised–disorganised; cooperative–uncooperative; reliable–unreliable; committed–uncommitted; trainable–untrainable; pleasant–unpleasant; and good–bad. The position of the positive and negative poles was varied between the items. The scales are shown in Appendix K.

Feeling thermometers – The participants’ explicit attitudes towards older and younger workers were also assessed with feeling thermometer scales. The participants were asked to mark a vertical line (100mm), ranging from “very negative” (scored as 0) to “very positive” (scored as 100), to indicate how they felt about older and younger workers in general. Each scale was completed separately for older and younger workers. The scales are shown in Appendix L.

Motivation to respond without bias - The participants’ internal and external motivation to respond without bias was measured using an adapted version of Plant and Devine’s (1998) Motivation to Respond without Prejudice Scales, modified to refer to older workers. The scales consisted of ten items; five items each pertaining to internal motivation (IMS; e.g., “Being unbiased towards others, including older workers, is important to my self-concept”) and five items pertaining to external motivation (EMS; e.g., “I attempt to appear unbiased toward others, including older workers in order to avoid disapproval from others”). The response scale ranged from 1 (“strongly disagree”) to 7 (“strongly agree”). For the purpose of the present study, some modifications were made for the original IMS/EMS. The category ‘Blacks’ was simply substituted to ‘older workers’ in the present study. Further, the word ‘prejudiced’ was changed to ‘unbiased’⁶. A last change to the original IMS/EMS items was the modification of the item wording. An example item from the present study is “I am personally motivated by my beliefs to be unbiased *towards others, including older workers*” (italics marking the additional words). The slight addition to the wording was included to increase the face validity of the scale, as it is unlikely that

⁶ Although using the term ‘ageist’ may have seemed as the most apparent option for such replacement, it has been found that people have varied opinions about the term, or may even be totally unaware of the meaning of the term (Loretto et al., 2000).

individuals think of older workers in isolation. Although it is acknowledged that the consequences for the content validity are unknown, it is argued that without such modification a larger threat would be to the scale's face validity. It is also true that the construction of the items is a judgment-based decision and is therefore subjective, intended to reflect the construct to the best of the researchers' ability (Kerlinger, 1986). The full list of items is shown in Appendix M.

Demographics - The participants' demographics, including sex, age, ethnicity, educational background and experience in recruitment and selection practices, were recorded with a questionnaire. The questionnaire is shown in Appendix N.

Experimental manipulation - The mental imagery intervention described in Study 1, was also used in the present study.

Procedure

Participants were invited to take part in a study, titled "Opinions about employees with different characteristics", involving two parts, which were separated by one week. Participants were tested individually. On arrival at the laboratory, the participant was provided with an Information Sheet outlining the purpose of the study (see Appendix O). After signing a consent form, the participant completed the explicit attitude measures and the motivation scales in a counterbalanced order (IMS/EMS were completed together with the question order randomised for each participant).

Once the questionnaires were completed, the participants completed the IAT⁷. An appointment was then scheduled for the participant's follow-up session one week later.

One week later, the participant returned to the laboratory and was randomly assigned to either the experimental or a control group. The participant was given the mental imagery instructions relevant to their condition, both verbally and in writing, as in Study 1. The experimental group participants were asked to imagine and describe three respected and valued older workers from their surroundings, whereas the control group participants were asked to imagine and describe three holiday destinations they would like to visit. After the imagery task, the participant completed the explicit attitude measures and the IAT for the second time. Finally, the participant completed the demographic questionnaire. The participant was then debriefed and given a \$5 gift voucher for his/her participation. The debriefing sheet is shown in Appendix P.

The study was reviewed and approved by the University of Canterbury Human Ethics Committee, as well as the Human Ethics Committee of another local tertiary institution, who wish to remain anonymous.

Results

The mean IAT effect, the mean responses and difference scores for the semantic differential and feeling thermometer scales, and the mean responses on the Internal

⁷ The IAT was always completed following the explicit measures of attitudes as the IAT has been found to be less controllable than explicit measures of attitudes and is therefore unlikely to be influenced by the completion of the explicit measures (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005).

and External Motivation to Respond without Bias scales as a function of condition and time are shown in Table 3.

Preliminary analyses revealed no effects of sex or age of participant on any of the dependent measures and so these factors will not be considered further.

Table 3: The Mean IAT Effect, the Mean Responses and Difference Scores for the Explicit Attitude Scales, and the Mean Responses on the Motivation to Respond without Bias Scales as a Function of Condition and Time.

Measure	Time 1		Time 2	
	Experimental <i>Mean (sd)</i>	Control <i>Mean (sd)</i>	Experimental <i>Mean (sd)</i>	Control <i>Mean (sd)</i>
IAT	0.41 (0.24)	0.41 (0.38)	0.34 (0.27)	0.40 (0.33)
SD Younger	65.50 (11.71)	64.26 (15.08)	66.45 (13.95)	66.92 (17.08)
SD Older	64.58 (12.81)	66.76 (12.36)	73.50 (11.25)	68.68 (11.85)
SD diff score	0.92 (17.05)	-2.50 (19.65)	-7.05 (16.87)	-1.76 (20.75)
FT Younger	77.73 (13.02)	79.78 (12.73)	69.77 (18.73)	74.39 (20.78)
FT Older	71.41 (18.07)	77.74 (12.18)	77.45 (9.48)	75.17 (15.85)
FT diff score	6.32 (20.23)	2.14 (19.96)	-7.68 (18.04)	-0.59 (27.91)
IMS	6.88 (1.32)	7.17 (1.21)		
EMS	5.36 (1.36)	5.12 (1.18)		

Note. IAT = Implicit Association Test; SD = Semantic differential scales; FT = Feeling thermometer scales; diff score = difference score (younger–older); IMS/EMS = Internal/external motivation to respond without bias scales.

Implicit Attitudes (IAT)

As with the previous studies, the IAT data was analysed using the improved algorithm recommended by Greenwald et al. (2003). A positive IAT score represents a more positive evaluation of the younger, relative to the older, workers, and a negative IAT effect represents a more positive evaluation of the older, relative to the younger, workers. The higher the number in either direction, the stronger the evaluation.

The mean error rates were 5.8% for time 1 and 5.5% for time 2 for the experimental group, and 5.5% for time 1 and 5.3% for time 2 for the control group. The error rates are comparable to those in previous studies (e.g., Blair et al., 2001; Karpinski & Hilton, 2001) and will not be discussed further. In addition, as the IAT block order did not show interpretable effects⁸, block order was not considered further in the analysis.

Single-sample t-tests were computed to test whether there was a significant bias on the IAT. Bias scores in each condition at each testing time were compared to zero (i.e., no difference in responses toward between older and younger workers).

Significant bias was revealed for both groups at both times (Control, Time 1: $t(23) = 5.25, p < .05$; Time 2: $t(23) = 5.97, p < .05$; Experimental, Time 1: $t(23) = 8.52, p < .05$; Time 2: $t(23) = 6.31, p < .05$).

A 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA was conducted on the IAT bias scores, with time as a repeated measures factor. No significant effects were found.

⁸ A 2 (Condition: control/experimental) x 2 (Time: 1/2) x 2 (Block order: congruent/incongruent block first) ANOVA was conducted on the IAT bias scores, with time as a repeated measures factor. A significant time by block order interaction was found, $F(1, 44) = 9.02, p < .05, \eta_p^2 = 0.17$. Post-hoc tests (Tukey, $p < .05$) showed there to be no differences between the times when the congruent block was done first, but, when the incongruent block was done first, the difference between times was significant ($M_s = 0.44$ vs. 0.26). No effects of condition were found.

Semantic Differentials (SD)

All items were coded so that higher scores represent more positive evaluations. The internal reliabilities for both the older worker and the younger worker scale were high, with Cronbach's alpha reliability coefficients of .87 and .90 respectively. The items in each scale were collapsed into a single score, one for the older worker scale and another for the younger worker scale.

As shown in Table 3, the responses on the SD scales were overall positive (i.e., above the midpoint of the scales) for both the older and younger workers and in both conditions. For purposes of comparability with the relative implicit measure, difference scores were calculated between younger and older workers. Positive scores indicate more positive evaluations of younger workers relative to older workers, and negative scores indicate more positive evaluations of older relative to younger workers. The higher the score (in either direction), the greater the difference between the evaluations of older and younger workers.

Single-sample t-tests were computed to test whether there was significant bias (i.e., no difference between the evaluations between younger and older workers) on the SD difference scores for each condition at each time of testing. No significant differences were found for either condition at either time, indicating that overall, no significant bias was evident as measured by the semantic differential scales.

A 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA was conducted on the SD difference scores, with time as a repeated measures factor. A significant main

effect of time was found, $F(1, 46) = 4.29, p < .05, \eta_p^2 = .08$, which was qualified by a significant time by condition interaction, $F(1, 46) = 6.25, p < .05, \eta_p^2 = .12$, shown in Figure 3. Post-hoc tests (Tukey, $p < .05$) on the interaction showed there to be no difference in scores between times 1 and 2 for the control group, but there was a significant difference in scores as a function of time for the experimental group; The mean scores were positive at time 1 indicating a more positive evaluation of the younger relative to older workers but at time 2 mean scores were negative indicating a more positive evaluation of the older workers ($M_s = 0.92$ vs. -7.05). No differences were found as a function of condition at either time 1 or time 2.

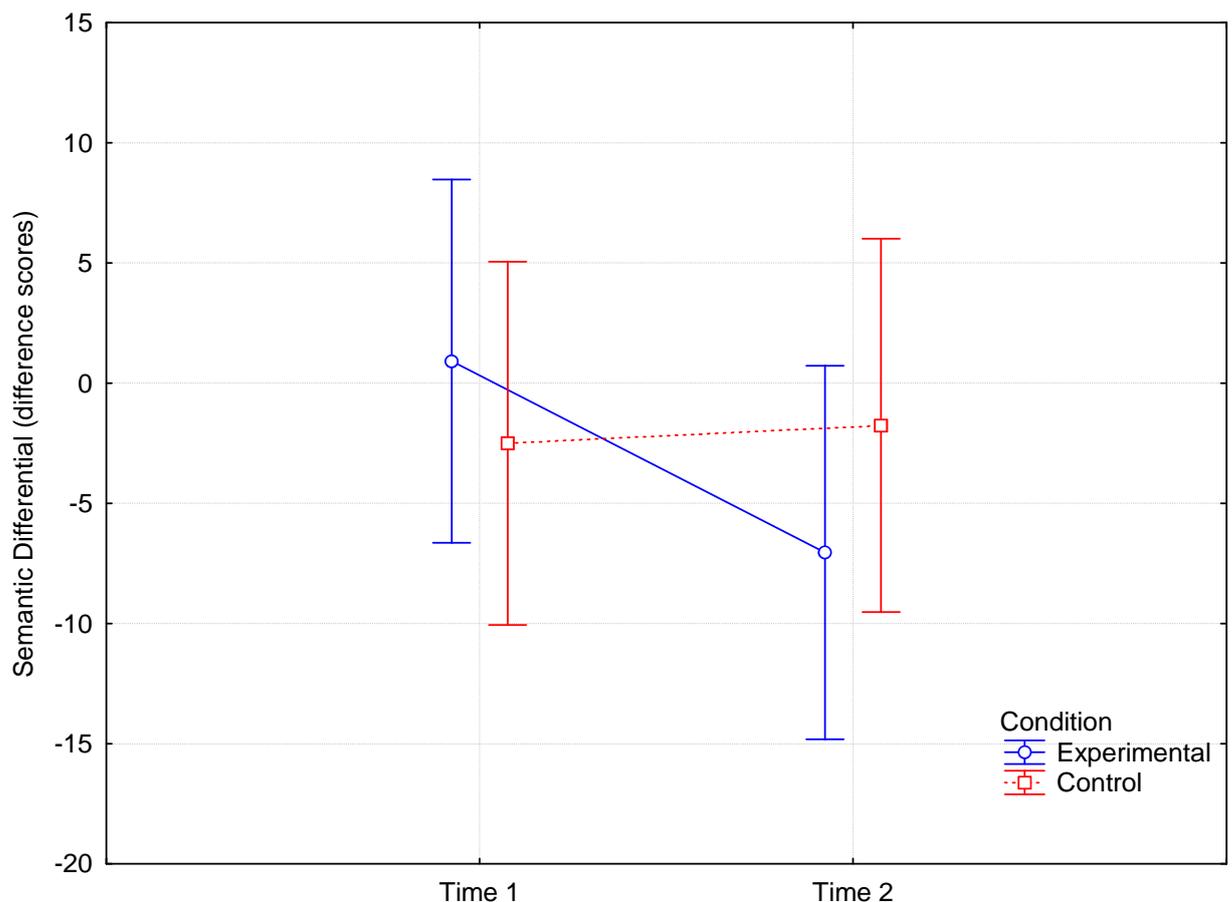


Figure 3: Semantic differential difference scores as a function of time and condition.

Feeling Thermometers (FT)

Three participants failed to complete the feeling thermometer measure either at time 1 or 2, resulting in a sample size of 45 for the feeling thermometer responses.

As with the semantic differential scales, the participants' affective responses towards older and younger workers were measured using two separate feeling thermometer scales. The scales ranged from 0 to 100, where a higher number indicates more positive feelings towards the group.

As shown in Table 3, the responses on the FT scales were overall positive (i.e., above the midpoint of the scales) for both the older and younger workers and in both conditions. For purposes of comparability with the relative implicit measure, difference scores were calculated between younger and older workers. A positive score indicates more positive evaluations of younger workers relative to older workers, and a negative score indicates more positive evaluations of older relative to younger workers.

Single-sample t-tests were computed to test whether there was a significant bias on the feeling thermometer difference scores. Difference scores in each condition, at each testing time, were compared to zero (i.e., no bias). For the control group, the mean responses did not differ significantly from zero at either time, but for the experimental group, time 2 responses were marginally significantly different from

zero ($t(22) = -2.00, p = .06$), indicating that the experimental group's evaluations of older workers were significantly more positive relative to the evaluations of younger workers.

A 2 (Condition: experimental/control) x 2 (Time: 1/2) ANOVA with time as a repeated measures factor was computed on the FT difference scores. A significant main effect of time, $F(1, 43) = 9.64, p < .05, \eta_p^2 = .18$ was found, qualified by a significant time by condition interaction, $F(1, 43) = 4.25, p < .05, \eta_p^2 = .09$ – see figure 4 below. Post-hoc tests (Tukey, $p < .05$) showed there to be no difference in scores between times 1 and 2 for the control group, but a significant difference in scores as a function of time for the experimental group. For the experimental group, mean scores were positive at time 1 indicating a more positive evaluation of the younger than the older workers but at time 2 mean scores were negative indicating a more positive evaluation of the older workers ($M_s = 6.32$ vs. -7.68). No differences were found as a function of condition at either time 1 or at time 2.

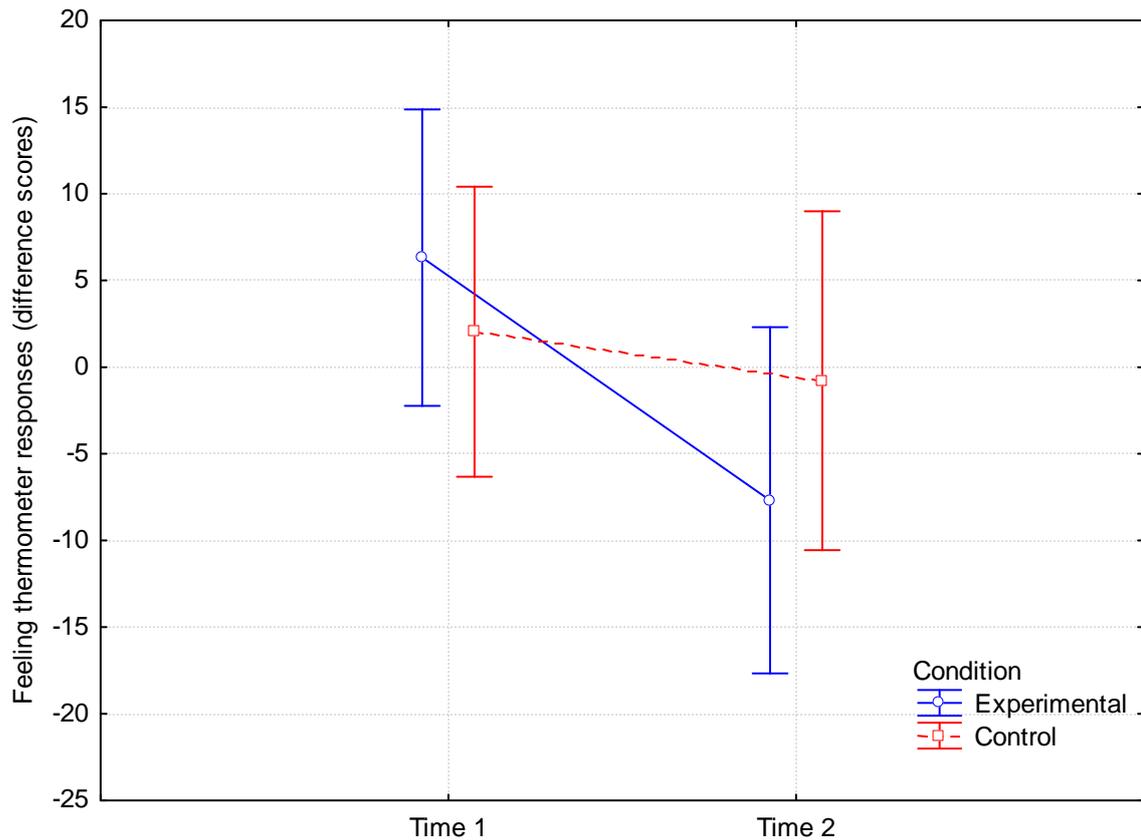


Figure 4: Feeling thermometer difference scores as a function of time and condition.

Motivation to Respond without Bias

Internal/External Motivation to Respond without Bias (IMS/EMS) – The IMS/EMS response options ranged from 1 (strongly disagree) to 9 (strongly agree). One item was reverse scored, such that with all items, a higher number indicates a stronger agreement with the statement and hence a stronger motivation. Overall IMS and EMS scores were calculated by collapsing all the items in to a single score (separately for the IMS and EMS). The IMS scale had good internal reliability with Cronbach alpha reliability coefficient of .80. The EMS scale showed rather poor internal reliability with Cronbach alpha reliability coefficient of .57. An item analysis of the EMS scale

items showed that deleting any of the items would not result in improvements in the internal reliability and hence the original items were retained.

As expected, the two motivation scales were not related in either the control ($r(48) = .19, p > .05$) or in the experimental conditions ($r(48) = -.03, p > .05$).

A 2 x (Motivation scale: IMS/EMS) x 2 (Condition: control/experimental) ANOVA was conducted on the motivation scores with the scales as a repeated measures factor. A main effect of the scale was found, $F(1, 46) = 50.64, p < .05, \eta_p^2 = .52$, indicating that the participants had higher internal than external motivation to respond without bias ($M = 7.03$ vs. $M = 5.25$).

Relationships between the Variables

Pearson Product-Moment correlation coefficients were calculated to investigate the relationships between the dependent measures at time 1 and time 2 as a function of condition. Correlations were calculated separately for the two conditions to investigate the influence of the intervention on the relationships between the measures. The semantic differential and feeling thermometer scale responses are shown as difference scores here such that a positive number indicates stronger bias against older, relative to younger, workers, and a negative score a stronger bias against younger, relative to older, workers. In addition, to create a continuous variable for the interaction between IMS and EMS, two indices were calculated (following the method from Yabar, Johnston, Miles, & Peace, 2006). The first index was calculated by summing the IMS and EMS scores. A high index indicates a high score on both

IMS and EMS and a low index a low score on both. An intermediate score would indicate a high score on one scale and low on the other, or intermediate scores on both of the scales. A second index was created by subtracting the score of EMS from that of IMS. A positive index would then indicate a higher score on IMS than on the EMS and a negative index a higher score on EMS than on IMS. The indices allow for the examination of combined and interactive effects between the IMS and EMS. The correlations are shown in Table 4. The correlations above the diagonal are for the experimental condition and the correlations below the diagonal are for the control condition. Due to the high number of pairwise comparisons, a more conservative p -value of .01 was applied⁹.

As expected, the semantic differential scales at times 1 and 2 were significantly correlated (Control $r(24) = .85, p < .01$; Experimental $r(24) = .71, p < .01$). The difference between the two conditions' correlation coefficients was not significantly different. The feeling thermometer responses at times 1 and 2 were also significantly correlated in the control condition ($r(23) = .83, p < .01$). Further, the semantic differential responses and feeling thermometer responses were significantly correlated with each other for both times in the control group (FT T1-SD T1 $r(23) = .59, p < .01$; FT T1-SD T2 $r(23) = .63, p < .01$; FT T2-SD T1 $r(23) = 0.71, p < .01$; FT T2-SD T2 $r(23) = .70, p < .01$). For the experimental group, both explicit attitude measures were correlated within the same measurement time (FT T1-SD T1 $r(22) = .58, p < .01$; FT T2-SD T2 $r(22) = .81, p < .01$). The differences in correlations between the groups were not significantly different. The IAT at time 2 was significantly correlated with time 1 feeling thermometer responses in the control group ($r(23) = .60, p < .01$),

⁹ A p -value of .01 was chosen (recommended by e.g., Cohen, 1992) instead of the conventional Bonferroni or sequential Bonferroni procedure due to the overly conservative nature of the procedure (e.g., Moran, 2003)

indicating that those participants who showed positive evaluations of younger, relative to older, workers at time 1 on the feeling thermometer, also showed stronger bias against older, relative to younger, workers on the IAT at time 2. No other significant relationships were found with the IAT in the control or the experimental conditions.

In the control group, the IMS-EMS index correlated significantly and negatively with the IAT at time 2 ($r(24) = -.52, p < .01$), indicating that those participants higher in internal, relative to external, motivation showed lower IAT effects at time 2 (i.e., less bias against older, relative to younger workers). Furthermore, as can be expected, the motivation indices were significantly correlated with the individual motivation scales (IMS with IMS+EMS $r(24) = .78, p < .01$; EMS with IMS+EMS $r(24) = .76, p < .01$; IMS with IMS-EMS $r(24) = .65, p < .01$; EMS with IMS-EMS $r(24) = -.63, p < .01$). For the experimental group, the motivation indices were significantly correlated with the individual motivation scales, as in the control group (IMS with IMS+EMS $r(24) = .69, p < .01$; EMS with IMS+EMS $r(24) = .71, p < .01$; IMS with IMS-EMS $r(24) = .71, p < .01$; EMS with IMS-EMS $r(24) = -.73, p < .01$).

Table 4: Correlations between the Dependent Measures.

Measure	1	2	3	4	5	6	7	8	9	10
1. SD Time 1	-	.71*	.58*	.46	-.08	.36	-.26	.35	.07	-.42
2. SD Time 2	.85*	-	.45	.81*	.01	.16	-.38	.18	-.14	-.39
3. FT Time 1	.59*	.63*	-	.43	.14	.21	-.13	-.14	-.20	.02
4. FT Time 2	.71*	.70*	.83*	-	.21	.03	-.20	.20	.01	-.28
5. IAT Time 1	.08	.08	.13	-.13	-	.38	-.05	.09	.04	-.10
6. IAT Time 2	.23	.29	.60*	.39	.35	-	.17	.50	.48	-.24
7. IMS	.02	-.10	-.26	.25	-.21	-.38	-	-.03	.69*	.71*
8. EMS	.03	.12	.20	-.00	.34	.28	.19	-	.71*	-.73*
9. IMS+EMS	.03	.01	-.05	-.16	.08	-.07	.78*	.76*	-	-.03
10. IMS-EMS	-.01	-.17	-.36	-.20	-.43	-.52*	.65*	-.63*	.02	-

Note. SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test; I/EMS = Internal/External Motivation to Respond without Bias; IMS+EMS = sum of the motivation scales; IMS-EMS = subtraction index of the motivation scales. Correlations above the diagonal are for the experimental condition, and correlations below the diagonal are for the control condition. The SD and FT responses are presented as difference scores such that a positive number indicates more bias towards older, relative to younger, workers. $N = 24$ for both groups ($N = 23$ for the control group and $N = 22$ for the experimental group for those correlations including the feeling thermometer responses).

* $p < .01$.

Discussion

The present study aimed to replicate the finding that negative attitudes towards older, relative to younger, workers exist at an implicit level. The study also investigated explicit attitudes towards older and younger workers, as well as individual differences in motivation to respond without bias on such attitudes. Further, the malleability of both implicit and explicit attitudes was investigated with the use of a mental imagery exercise used in Study 1.

Implicit attitudes

As expected, negative implicit attitudes were found towards older, relative to younger, workers. In combination with Study 1, the present research provides strong

evidence for the existence of implicit bias towards older, relative to younger, workers. Importantly, previous research has not investigated implicit attitudes towards older workers.

Similar to the results of Study 1, the pattern of results suggested some reduction in the experimental group's implicit bias as a function of the mental imagery exercise, but this result did not reach statistical significance.

The participant sample used in the present study did not strengthen the impact of the manipulation, relative to Study 1, as was expected. That is, the Management students' implicit attitudes were not influenced by the mental imagery exercise. In view of previous research that has provided evidence for the malleability of implicit attitudes towards older individuals in general, the lack of malleability was surprising. Although effort was made to investigate attitudes towards older (relative to younger) workers with a more relevant participant sample, the participants nonetheless were students with limited amount of work experience. Indeed, when asked about the participants' practical experience with recruitment and selection processes and practices, the mean response was 2.00 on a five-point scale (with higher number indicating more experience). Therefore, it was deemed vital to replicate the study with a sample of Human Resources (HR) and Management Professionals ('Professionals' from hereafter) who are likely to have more experience with employment related context and are likely to be more able to think of relevant examples of older workers in the imagery exercise. Study 2b therefore replicated Study 2a using a sample of HR and Management Professionals.

Explicit attitudes

It was expected that the participants would show more negative attitudes towards older, relative to younger, workers. Some evidence for the bias was found, as the experimental group participants showed more positive evaluations of younger, relative to older, workers at time 1 on the feeling thermometer scales. In contrast, there were no differences between the evaluations of the younger and older workers for the control group or in the semantic differential scales for either condition. On observing the absolute (rather than relative) scores, overall the evaluations of both target groups were positive, and this was evident for both groups and in both the measures of explicit attitudes employed - the semantic differential scales and the feeling thermometer scales. The lack of consistent negative bias is not in agreement with previous research that has found negative attitudes toward older workers on explicit measures (Loretto et al., 2000; McGregor & Gray, 2001, 2002; B. A. Richardson, Webber, Smith, & Webb, 2007; Rosen & Jerdee, 1976). Much of the previous research, however, has only asked of opinion towards older employees, rather than evaluations of both older and younger workers. It is therefore possible that by providing a comparison group to the participants (i.e., younger workers), the desire to appear egalitarian may be more salient. Giving higher evaluations to one group over another can be considered as going against the universal norms of equality. Further, as part of their University education, all the participants would have had learned about the legislation regarding discrimination in employment (Human Rights Act, 1993) and hence were knowledgeable that using age as a criterion for decision-making in employment is unlawful. It is therefore plausible that the participants responded in an egalitarian manner due to concerns of normative pressures and/or

because of the internal desire to maintain an egalitarian self-image (Nosek, 2005; Gartner & Dovidio, 1986).

Consistent with expectations, the participants in the experimental group showed a significant change in their evaluations, having more positive attitudes towards older, relative to younger, workers following the mental imagery intervention. More specifically, the participants in the control group showed no difference in attitudes between measurement times 1 and 2, whereas the participants in the experimental group showed more positive evaluations of younger, relative to older, workers at time 1 and more positive evaluations of older, relative to younger, workers at time 2. This was true in both the semantic differential and the feeling thermometer measures.

Motivation to respond without bias

The present study also investigated the influence of participants' motivation to respond without bias to both implicit and explicit attitude measures. Consistent with other studies using university students as participants, higher internal than external motivation to respond without bias was found (Plant & Devine, 1998; Ratcliff et al., 2006). The predictions that participants high in internal motivation would show less bias on both implicit and explicit attitude measures than those individuals low in internal motivation was not supported. In fact, none of the correlations between the individual motivation scales and the attitudinal variables reached statistical significance. The prediction that participants higher in internal, relative to external, motivation would show less bias on the attitude measures was also largely unsupported by the data. Only one significant relationship with the attitude variables was found in that the higher the control group participants' internal, relative to

external motivation, the lower was the bias against older, relative to younger, workers on the IAT at time 2. This is consistent with previous research (Devine et al., 2002). The results largely indicate that any differences observed in the attitude measures cannot be explained by the participants' motivations. Finally, the participants' level of motivation did not explain the degree of explicit attitude malleability.

Previous research has found both support and lack of support for the influence of motivation on attitudes. For example, Lowery and colleagues (2001) found no influence of internal or external motivation on implicit or explicit racial attitudes. It should be also noted that the EMS showed a weak level of internal consistency. Although the cause for the unreliability of the scale is unknown, as discussed in the method section, the wording of the items was changed from the original IMS/EMS and the consequences of such a change was unknown. Due to the lack of influence of the participants' motivation on their attitudes, the scale was not included in the subsequent studies.

Relationship between implicit and explicit attitudes

It was expected that relatively weak relationships would be found between the implicit and explicit attitude measures. Consistent with the (general) lack of negative attitudes towards older, relative to younger, workers in the explicit attitude measures, the implicit and explicit attitudes were largely unrelated to each other. The only significant correlation observed was between the time 2 IAT and the time 1 feeling thermometer responses for the control group, such that those participants who showed positive evaluations of younger, relative to older, workers at time 1 on the feeling thermometer scale, also showed more implicit bias towards older, relative to younger,

workers at time 2. Previous research investigating attitudes towards older individuals have similarly found a dissociation between implicit and explicit attitude measures (e.g., Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001). For example, Nosek et al. (2002a) found a weak correlation between implicit and explicit attitudes towards older, relative to younger, individuals, and the present data is consistent with such a finding. It can be speculated then that although the social norms may not be as strong as in other domains, such as racism, social desirability concerns may still be present in the domain of ageism, particularly in the light that the measures assessed both younger and older workers in the same questionnaire, as discussed above.

In sum, the findings of the present study replicated the findings from Study 1 and indicated that implicit bias towards older workers is present. Similar to Study 1, no clear evidence was found for the malleability of implicit attitudes. Explicit bias against older workers was not evident, however the evaluations became more positive as a function of the mental imagery intervention.

Although the sample of Management students used in the present study is likely to mirror those who are involved in employment related decision making better than the students used in Study 1, it was deemed vital to ensure that the results would indeed be applicable to individuals dealing with employment selection. Therefore, the present study was replicated with a sample of Professionals.

Study 2b

While Study 2a investigated attitudes towards older and younger workers with a sample to whom employment related issues are familiar, namely, Management students, the question remained whether the findings would generalise to the wider population and importantly, to individuals who are responsible for Human Resources related decisions. The present study therefore sought to replicate Study 2a with Managers and Human Resource Management (HRM) professionals.

Method

Participants

Twenty Professionals (5 male) volunteered to take part in the study in return for \$5 gift voucher. Of the participants, 6 were Managers, 6 were HR consultants, 5 were HR advisors, 1 was a recruitment coordinator, 1 a business coach and 1 an administration officer. Six participants were in the health industry, 5 each in education and HR consulting, 2 in manufacturing and 2 in the service industry. All but one participant had a qualification related to Human Resources. The participants' ages ranged from 23 to 55, with a mean of 34.8. Ninety percent ($n = 18$) of the participants were involved in employee selection at the time of participating in the study. The participants rated themselves on a five-point Likert type scale (1 = low; 5 = high) on their experience and knowledge on employee recruitment and selection practices, and showed a relatively high mean with both experience and knowledge (experience $M = 3.47$, $SD = 1.09$; knowledge $M = 3.76$, $SD = 0.89$).

Measures

The measures were identical to those of Study 2a apart from the minor change in the debriefing sheet (see Appendix Q) excluding the description of the control group mental imagery exercise used in Study 2a. Also, the demographics sheet included more appropriate questions for the Professionals, including a question on the participants' profession and the industry they work in (see Appendix R).

Procedure

An identical method to Study 2a was used with the exception of three factors. First, the experimenter visited the participants at their workplaces, instead of the participants coming to the laboratory. It was ensured that a quiet, private location was available for testing to take place and that no interruptions would occur. Second, the control group participants did not complete the mental imagery exercise (i.e., describing holiday destinations). It was determined that such an exercise would be questionable in terms of face validity. The experimental group participants did however complete the mental imagery exercise as in Study 2a. Finally, the motivation scales used in Study 2a were not included.

Results

The mean responses for the Implicit Association Test, the semantic differential and feeling thermometer scales as a function of condition and time are shown in Table 5.

Due to the small number of male participants in the sample, sex was not considered as a factor in the subsequent analysis. In addition, as the participants' age did not influence any of the dependent variables, it was not considered further in the analyses.

Table 5: The Mean Responses for the IAT and the Mean Responses and the Difference Scores for the Explicit Attitude Scales as a Function of Time and Condition.

Measure	Time 1		Time 2	
	Experimental <i>Mean (sd)</i>	Control <i>Mean (sd)</i>	Experimental <i>Mean (sd)</i>	Control <i>Mean (sd)</i>
IAT	0.24 (0.32)	0.40 (0.36)	0.32 (0.34)	0.50 (0.19)
SD Younger	59.44 (9.19)	65.00 (6.70)	58.75 (11.26)	67.42 (12.79)
SD Older	64.38 (8.43)	60.02 (10.30)	61.40 (9.10)	62.55 (11.38)
SD diff score	-4.95 (8.36)	4.98 (12.94)	-2.65 (10.34)	4.87 (14.31)
FT Younger	66.00 (14.21)	80.10 (11.35)	64.67 (8.62)	78.50 (8.62)
FT Older	66.70 (15.71)	70.90 (23.44)	65.55 (14.10)	70.80 (14.35)
FT diff score	-0.70 (18.40)	9.20 (16.18)	-0.90 (13.91)	7.70 (16.15)

Note. IAT = Implicit Association Test; SD = Semantic differential scales; FT = Feeling thermometer scales; diff score = difference score.

Implicit Attitudes (IAT)

As with previous studies, the IAT data was analysed using the improved algorithm recommended by Greenwald et al. (2003). A positive IAT score represents a positive evaluation of the younger, relative to the older, workers, and a negative IAT effect represents a more positive evaluation of the older, relative to the younger, workers.

The higher the number in either direction, the stronger the evaluation.

The mean error rates were <10% and were similar to those in previous studies but were not considered further here. As initial analyses showed that IAT block order showed no effects, the factor was not considered further in the analyses.

Single-sample t-tests were computed to test whether there was a significant bias on the IAT. Bias scores in each condition at each testing time were compared to zero (i.e., no difference in general affective responses toward between older and younger workers). Significant bias was revealed for both groups at both times (Control, Time 1: $t(9) = 3.53, p < .05$; Time 2: $t(9) = 8.07, p < .05$; Experimental, Time 1: $t(9) = 2.44, p < .05$; Time 2: $t(9) = 2.94, p < .05$).

A 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA was conducted on the IAT bias scores, with time as a repeated measures factor. No significant effects were found.

Semantic Differentials (SD)

All items were coded so that higher scores represent more positive evaluations. The internal reliabilities for both the older worker and the younger worker scales were high, with Cronbach's alpha reliability coefficients of .82 for the older worker scale and .85 for younger worker scale. The items in each scale were collapsed into a single score, one for the older worker scale and another for the younger worker scale. As shown in Table 5, the responses on the SD scales were overall positive (i.e., above the midpoint of the scales) for both the older and younger workers and in both conditions. For purposes of comparability with the relative implicit measure, difference scores

were calculated between younger and older workers. Positive scores indicate more positive evaluations of younger, relative to older, workers and negative scores indicate more positive evaluations of older, relative to younger, workers. The higher the score, the greater the difference between the evaluations of older and younger workers.

Single-sample t-tests were computed to test whether there was significant bias (i.e., no difference between the evaluations between younger and older workers) on the SD difference scores for each condition at each time of testing. No significant differences were found for either condition at either time, indicating that overall, no significant bias was evident as measured by the semantic differential scales.

A 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA was conducted on the SD difference scores, with time as a repeated measures factor. No significant effects were found.

Feeling Thermometers (FT)

One participant failed to complete the younger worker scale at time 2. Therefore the analysis included only 19 participants.

The participants' affective responses towards older and younger workers were measured using two separate feeling thermometer scales. The scales ranged from 0 to 100, where a higher number indicated more positive feelings towards the group. As shown in Table 5, the responses on the FT scales were overall positive (i.e., above the

midpoint of the scales) for both the older and younger workers and in both conditions. As with the semantic differential scales, difference scores were calculated between younger and older workers. Positive scores indicate more positive evaluations of younger, relative to older, workers and negative scores indicate more positive evaluations of older, relative to younger, workers. The higher the score, the greater the difference between the evaluations of older and younger workers.

Single-sample t-tests were computed to test whether there was significant bias (i.e., no difference between the evaluations between younger and older workers) on the FT difference scores for each condition at each time of testing. No significant differences were found for either condition at either time, indicating that overall, no significant bias was evident as measured by the feeling thermometer scales.

A 2 (Condition: experimental/control) x 2 (Time: 1/2) ANOVA with time as a repeated measures factor was computed on the FT difference scores. No significant effects were found.

Relationships between the Variables

Pearson Product-Moment correlation coefficients were calculated to investigate the relationships between the dependent measures at time 1 and time 2 as a function of experimental condition. Correlations were calculated separately for the two conditions to investigate the influence of the mental imagery intervention on the measures. The correlations are shown in Table 6. The correlations above the diagonal are for the experimental condition and the correlations for the control group are below

the diagonal. Due to the high number of pairwise comparisons, a more conservative p -value of .01 was applied. However, as the small sample size in the present study resulted in low power for detecting statistically significant relationships, correlations indicative of a large effect size (i.e., $r \geq .50$; Cohen, 1988; 1992) were also interpreted (all correlations indicative of large effects had $p < .12$).

For the control condition, no statistically significant relationships were found. However, correlations indicative of large effect size were found for the attitude measures between the measurement times (SD scales $r(10) = .67$; FT scales $r(10) = .70$), although the correlation between the two IAT measurement time was in the unexpected direction ($r(10) = -.57$). In addition, the semantic differential scales at both times showed correlations indicative of strong effect size with the feeling thermometer scales at time 1 (time 1 SD $r(10) = .67$; time 2 SD $r(10) = .70$). The time 1 attitudinal measures also showed evidence for the relationship between implicit and explicit attitude measures (IAT-SD, $r(10) = .64$; IAT-FT $r(10) = .61$).

For the experimental group, the correlations for the attitude measures between the measurement times were not as strong as for the control group, although the IATs showed a correlation indicative of a large effect between time 1 and 2 ($r(10) = .53$). In addition, the feeling thermometer scales at time 1 and the semantic differential scales at time 2 were positively correlated ($r(10) = .72$). In addition, some evidence for the relationship between implicit and explicit attitudes was found with the IAT at time 1 having a negative correlation with the semantic differential scales at time 2 ($r(10) = -.61$), such that the higher the implicit bias at time 1, the lower were the explicit ratings of younger, relative to older, workers.

Table 6: Correlations between the Dependent Measures.

Measure	1	2	3	4	5	6
1. SD Time 1	-	.31	.45	.40	-.12	.05
2. SD Time 2	.67 ^a	-	.72 ^a	.20	-.61 ^a	-.42
3. FT Time 1	.67 ^a	.70 ^a	-	.30	-.33	.17
4. FT Time 2	.44	.40	.70 ^a	-	.06	.01
5. IAT Time 1	.64 ^a	.34	.61 ^a	.43	-	.53 ^a
6. IAT Time 2	-.01	-.04	-.12	-.17	-.57 ^a	-

Note. SD = Semantic Differential scales; FT = feeling thermometer scales; IAT = Implicit Association Test. Correlations above the diagonal are for the experimental condition ($N = 10$), and correlations below the diagonal are for the control condition ($N = 10$).

^a = correlations indicative of a large effect.

A comparison of Study 2a and 2b findings were also conducted. A 2 (Sample: student/professional) x 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA with time as a repeated measures factor was conducted on the IAT, SD and FT difference scores separately. No significant effects were found.

Discussion

The present study investigated Professionals' implicit and explicit attitudes towards older, relative to younger, workers. The aim of the study was to replicate Study 2a with a sample of Professionals who are likely deal with employment-related decisions, potentially having direct consequences on older workers.

As expected, the participants showed negative implicit bias against older, relative to younger, workers. The bias was evident at both measurement times, and no effect of condition was seen on the results, indicating a lack of influence of the mental imagery intervention on the experimental group's implicit attitudes. The finding supports the

suggestion that negative implicit attitudes exist towards older workers, and that the finding is generalisable to Professionals.

For the explicit attitude measures, a different pattern of results to Study 2a was found. No significant differences were found between the older and the younger worker scales for either group at either measurement time, indicating lack of bias on the explicit measures and a lack of influence of the mental imagery exercise. For both the semantic differential and the feeling thermometer scales, positive evaluations were given to both older and younger workers (i.e., mean values above the midpoint of the measurement scale), and this was true for both measurement times.

The results vary from those of Study 2a where changes were observed for the experimental group between the measurement times. That is, evidence of explicit attitude malleability was found in Study 2a in contrast to the present study. Why such a difference between the student and the Professional sample was found with the explicit attitude measures warrants consideration. It is plausible that as Professionals have on-going dealings with employment-related issues and with employees of varying ages, responding on the explicit measures could have been based on stronger attitudes as compared with the student sample. Therefore thinking of positive examples of older workers may not have influenced the explicit measures of attitudes as stronger attitudes are likely to be more resistant to change (R. E. Petty & Krosnick, 1995). It is also plausible that students would be more susceptible to social desirability concerns and may have showed more positive responses following the mental imagery exercise as a function of impression management. The Professionals in contrast may have been less influenced by concerns of impression management.

Interestingly however, both Professionals and students showed significant implicit bias towards older, relative to younger, workers. Both the student and Professional samples' implicit attitudes were also not affected by the mental imagery intervention. This is an important finding as it indicates that the pattern of findings regarding implicit biases is similar regardless of the participant sample used. Although increased experience in the workforce could have been expected to influence such attitudes, the results indicate that even those who work in the field of human resources hold negative implicit bias towards older workers. The result indirectly suggests that people's implicit bias against older workers may be difficult to expel due to its persistence even with Professionals who would be likely to see the lack of performance differences between younger and older workers. Such a suggestion is consistent with the view that implicit attitudes are relatively stable and difficult to change (Banaji, 2001; Eagly & Chaiken, 1993; Greenwald & Banaji, 1995; T. D. Wilson et al., 2000).

As with Study 2a, the relationships between the dependent variables showed that the measures used were reliable measures of attitudes. That is, the attitude measures between the measurement times showed good consistency. This was particularly so in the control condition, although an unexpected direction was found for the IAT scales in that those participants stronger in implicit bias against older, relative to younger, workers at one time, showed less bias at the other measurement time. The reason for this unexpected relationship is unclear, although notably, there were no mean differences in the IAT effects between the measurement times in the control condition.

Some evidence for the relationship between implicit and explicit attitudes was found, particularly for the control condition. Time 1 IAT was positively related to both of the explicit attitude measures at time 1, although these correlations did not reach a level of statistical significance. Such relationships of strong effect size were unexpected. Although nonsignificant, the control group's mean responses on both the explicit measures of attitudes at time 1 were positive, indicating bias against older, relative to younger, workers. In addition, the experimental group showed a negative correlation between time 1 IAT and the semantic differential responses at time 2. That is, the stronger the implicit bias towards older, relative to younger, workers at time 1, the less negative were the attitudes towards older, relative to younger, workers on the semantic differential scale at time 2. The negative direction of this relationship is not surprising, given that the experimental group showed negative implicit bias towards older, relative to younger, workers at time 1 whereas the semantic differential difference score at time 2 was actually negative, indicating more positive attitudes towards older, relative to younger, workers, although the finding on the semantic differential scale was not significant. Overall however, the relationships between implicit and explicit attitudes in the present study should be interpreted with caution, due to the small sample size.

In sum, the present study showed that implicit bias against older workers is also evident with a sample of Professionals. As with the student sample, no evidence for the malleability of the implicit bias was found. The explicit attitudes were generally positive and showed no differences between older and younger workers. Further, the mental imagery exercise had no influence on the explicit attitudes. The present results

highlight the importance of using both implicit and explicit attitude measures, as without the inclusion of the implicit measure, the present study would indicate that attitudes towards older workers were in fact positive. An important question was whether such attitudes were predictive of behaviour. This question was examined in Study 3.

Study 3

The previous three studies showed that implicit attitudes towards older, relative to younger, workers were negative, and that such attitudes were unaffected by a mental imagery intervention. In addition, Studies 2a and 2b showed that explicit attitudes towards older workers were similarly positive to those of younger workers. Study 2a also showed that explicit attitudes appeared to be relatively flexible and susceptible to the experimental intervention, whereas Study 2b showed relative stability in both implicit and explicit attitudes.

The relationship between attitudes and behaviour is a central question in social psychological research. The relationship between implicit and explicit attitudes and behaviour was also the focus of the present study. In addition, the malleability of attitudes and the potential influence of such malleability on behaviour were also investigated. In brief, the final study investigated people's implicit and explicit attitudes towards older and younger workers, and whether such attitudes would relate to behaviour in an employment-related context. Specifically, the participants took part in an ostensible pre-employment interview exercise, where each participant interviewed both a younger and an older applicant (actually confederates). Attitude measures and the mental imagery were completed prior to the exercise. The participants' behaviour was evaluated by the confederates and independent judges who evaluated the participants' behaviour from video-recordings. The participants also gave evaluations of the confederates.

Discriminatory behaviour against older workers

The behavioural component of ageism in the workplace has received relatively little research attention outside the US (Perry & Parlamis, 2006). As discussed in the Introduction section, this is surprising as discriminatory practices against older workers are evident in an employment context (Chartered Management Institute, 2005; McGregor & Gray, 2001; P. Taylor & Walker, 1994). Indeed, in a New Zealand based survey, over half of the respondents thought that age discrimination was present in their business sector (Davey, 2008). In addition, a study conducted in New Zealand found that a younger applicant was 6 to 12 times more likely to be short-listed for a low to medium demand position than an older applicant (M. Wilson & Kan, 2006).

Although consistent bias against older workers has been found, research has largely focused on reporting on the existence of such attitudes or discriminatory practices rather than investigating the link between the two. In addition, the potential antecedents of discriminatory practices towards older workers have been largely assumed to be those of negative attitudes towards older workers but the relationship has not been previously investigated. Further, the influence of the implicit component of ageist attitudes in discriminatory behaviour has not been explored. The present study therefore investigated whether ageist behaviour was evident in an employment-related context and whether individuals' implicit and explicit attitudes were related to such employment related behaviour.

The relationship between attitudes and behaviour

As discussed in the Introduction section, one of the major goals for investigating attitudes is to predict and change people's behaviour (e.g., Bessenoff & Sherman, 2000). However, research evidence on the relationship between attitudes and behaviour has been mixed (e.g., Glasman & Albarracin, 2006 for a recent meta-analysis). One potential source of such variation is the different ways that attitudes have been measured and the types of behaviours that have been assessed (Dovidio et al., 1997; Greenwald et al., in press). As discussed in the Introduction section, recent dual process models suggest that explicit measures of attitudes are likely to be predictive of more controlled, verbal behaviours and that implicit measures of attitudes are likely to be predictive of spontaneous, nonverbal behaviours (Asendorpf et al., 2002; Fazio, 1990; T. D. Wilson et al., 2000).

Research evidence supports such a conceptualisation. For example, Dovidio et al. (1997) found that participants' explicit race attitudes, assessed by the Old Fashioned Racism Scale, were predictive of more controlled behaviour, specifically the participants' ratings of Black and White interviewers (actual confederates). On the other hand, the participants' implicit attitudes, assessed by a response latency task, were predictive of a less controllable, nonverbal behaviour, namely blinking and visual contact. However, the implicit-spontaneous explicit-controlled attitude-behaviour relationship is not straightforward (Greenwald et al., in press). For instance, research has shown that implicit attitude measures can also be predictive of more controlled, deliberate behaviours, such as voting behaviour (Arcuri, Castelli, Galdi, Zogmaister, & Amadori, 2008). The present research aimed to further the understanding as to the relationship between implicit and explicit attitude measures

and both spontaneous and more controlled behaviours in an employment-related context.

Although no definite taxonomy of controlled and spontaneous behaviours exists (Dovidio et al., 1997; 2002), it is largely agreed that verbal behaviours are more controllable than nonverbal behaviours (Ekman & Friesen, 1969). Therefore both verbal (i.e., controlled) and nonverbal (i.e., spontaneous) behaviours were included in the present study. The specific behaviours to be rated were selected based on previous research that has found a relationship between the behaviours and attitude measures. The verbal behaviours of speaking time, the number of social and friendly comments made were included (Dovidio et al., 1997; McConnell & Leibold, 2001). Nonverbal behaviours of smiling, eye contact, friendliness, level of comfort, level of interest and engagement in the exercise, target's/participant's own comfort and the participant's body posture were included (Dasgupta & Rivera, 2006; Dovidio et al., 2002; Fazio et al., 1995; McConnell & Leibold, 2001; Shelton, 2003; Word et al., 1974). In addition, paralinguistic behaviours that can be considered as relatively uncontrollable were also included, namely, the abruptness/curtness of responses, speech errors and speech hesitations (Dasgupta & Rivera, 2006; McConnell & Leibold, 2001). Finally, the participants evaluated the targets' interview skills, a behaviour that can be considered as relatively controlled and has been previously found to be related to explicit measures of attitudes (Dovidio et al., 2002). In sum, nonverbal and paralinguistic behaviours were considered as spontaneous as it has been found that people have less control over such behaviours. Verbal behaviours and the participants' evaluations of the targets were considered as controlled behaviours, as they are easier for individuals to control and monitor.

As in previous studies, both implicit (IAT) and explicit measures (semantic differential and feeling thermometer scales) were included in the present study. The importance of using both implicit and explicit measures of attitudes in behavioural research has been highlighted by a recent meta-analysis on the predictive validity of attitudes. Using a group of 184 independent samples, Greenwald and colleagues (in press) found an average correlation between explicit measures and behaviour of .36 and an average correlation between implicit measures and behaviour of .27. The average correlation between implicit and explicit measures was .21. The researchers therefore encouraged the inclusion of both implicit and explicit measures of attitudes in research as each was found to have distinct predictive validity. The use of implicit measures was particularly encouraged in the context of inter-group behaviour, where the predictive utility of implicit measures was found to be higher than that of explicit attitude measures ($r = .24$ vs. $.12$).

In the context of older and younger workers, no research, to the author's knowledge, has been conducted on investigating the relationship between attitudes and behaviour. The present study aimed to address this important area in the current environment of the ageing population. As an increasing proportion of older individuals are represented in the labour force, understanding people's attitudes towards older workers and the potential relationship with behaviour is vital to further our understanding of barriers older individuals may face in gaining employment and advancing in employment. Such understanding is important for both the older employees and organisations (Davey, 2008; M. Wilson & Kan, 2006). Furthermore, the importance of investigating the implicit attitude-behaviour relationship has been

highlighted recent by the interest in implicit attitude measurement tools for applications in policy and business (Greenwald et al., in press).

The present study and research hypotheses

The present study included an alleged pre-employment interview training exercise, which involved an interaction between the participants and a younger, and an older, job applicant (“targets”; actually confederates). The participants’ behaviour towards the targets was evaluated by the targets being interviewed and by two independent observers. The observers rated the behaviour from video-recordings of the interaction. The participants also gave evaluations of the targets’ behaviour.

The participants’ attitudes were measured prior to the exercise, following the method from Studies 2a and 2b. That is, the implicit and explicit measures of attitudes were first completed without the mental imagery instructions (time 1). In a second session, the mental imagery exercise was completed first, followed by the measures of attitudes (time 2). The inclusion of the mental imagery exercise allowed for the investigation of its influence on measures of attitudes and behaviour.

Based on Studies 1 and 2a/b, it was expected that negative implicit attitudes would be found towards older, relative to younger, workers, but that such attitudes would not differ as a function of the mental imagery exercise. In addition, based on Studies 2a/b, it was expected that relatively positive explicit attitudes would be found towards older and younger workers, and that these attitudes may be susceptible to the experimental intervention (based on Study 2a).

As past research suggested that implicit and explicit measures of attitudes may be predictive of different types of behaviour, both spontaneous and more controlled type of behaviours were investigated in the present study. Based on previous research (Dovidio et al., 2002; Dovidio et al., 1997; McConnell & Leibold, 2001), it was expected that the participants' spontaneous behaviours (i.e., non-verbal and paralinguistic behaviour) would be primarily related to the participants' implicit attitudes and that their more controlled (i.e., verbal behaviour and participant's ratings of the targets) would be primarily related to their explicit attitudes. As no definite taxonomy of spontaneous-controllable behaviours exist (Dovidio et al., 1997) and because implicit measures of attitudes have also been found to be predictive of controllable behaviours (Greenwald et al., in press), no specific hypotheses were made with regards to the individual behaviours.

Method

Participants

Thirty-two (32) Management students (5 male) from the University of Canterbury volunteered to participate in the study in return for a \$15 gift voucher. The participants' ages ranged from 20 to 55 years, with a mean of 21.6 years. All participants had completed at least two years of management studies, including Human Resource Management courses. All participants had also had some work experience. Three participants did not return for the second experimental session, and so the final sample consisted of 29 participants.

Measures

The materials used in this study were identical to those used in Study 2a, apart from those described below.

IAT - After two participants from Study 2a had made comments about stimuli being somewhat ambiguous (in terms of age) on the IAT, the error rates for all the photograph stimuli were examined (i.e., photographs of older and younger workers). Total number of errors for all participants for all photos of the critical blocks (including blocks 3 and 6) was calculated. The percentage of the errors for each photo was calculated from this total error number. Error percentages ranged from 2.8 to 6.2%, with the exception of one picture for which the error rate, 11.7%, was considerably higher than that for the other stimuli. Due to this high error rate, this particular photograph was replaced with another ‘young female worker’ photo (see Appendix H). A pilot study conducted previously for estimating the ages of the possible targets found an average age of 27.31 for the new stimulus.

Interview Question & Answer sets – Two sets of interview questions and answers for part 2 of the study were developed (see Appendix S). Each set consisted of five questions and answers relating to competencies relevant to the position of an “advisor”¹⁰ (e.g., communication and interpersonal skills). The question and answer sets were evaluated by three subject matter experts (final year Industrial & Organizational Psychology Masters students) (evaluation forms are shown in Appendix T). The mean rating (1 = ‘poor’; 7 = ‘excellent’) for question Set 1 was

¹⁰ The role of an “advisor” was chosen as it is not age-specific. That is, advisory roles are filled both by younger and older individuals (personal communication, Katie Aitken, HR Advisor, January, 2007).

5.13 and for the answers 5.70. The mean rating for question Set 2 was 5.33 and for the answers 5.37. Accordingly, the question and answer sets were considered to be equivalent.

The targets' behaviour - The targets were blind to the hypothesis of the study. They were instructed to sit with their back parallel to the back of the chair, to make eye contact with the participant approximately 50% of the time, and to behave in a pleasant manner but not to appear overly friendly, consistent with instructions given in previous research (Dovidio et al., 1997; Word et al., 1974). Prior to the study, the targets participated in numerous practice sessions to ensure that they behaved in a comparable ways and that they were familiar with the question and answer sets. A pilot study was also conducted with two naïve participants to investigate the comparability of the targets' behaviour. The behaviour of the targets was evaluated from video-recordings by two independent judges. The judges were unaware of the hypotheses of the study and neither judge knew the targets personally. The judges coded the targets' behaviour twice: Once from a silent recording, and once from a non-silent recording. Only the target was visible in the recording. The target's eye contact, friendliness, level of comfort, level of interest, level of engagement, and body posture were recoded on a 9-point scale, and the number of smiles was recorded from the silent recording. Ratings of friendliness, eye contact, abruptness/curtness, level of comfort, level of interest, and the level of engagement were recorded on a 9-point scale from the non-silent tapes. Further, the number of speech errors, number of speech hesitations and the number of friendly comments made by the target were coded from the non-silent recordings. The order in which the silent and non-silent recordings were watched was counterbalanced between the two coders. As the ratings

from the silent and non-silent recordings were comparable, the subsequent judges' ratings (in the main study) were made only from the non-silent recordings. The two judges' ratings were comparable ($r = .49$). The judges' rating showed that the targets' behaviour was largely comparable and where differences were found (e.g., younger confederate smiling slightly more), feedback was given to the targets and further practice sessions were held to ensure the consistency of the behaviour between the targets.

Using the data from the main study, an analysis was conducted on the targets' behaviour to ensure that the targets were behaving in a comparable manner and that any differences in the ratings of the participants' behaviour could not be attributed to the behaviour of the targets.

An independent observer rated the behaviour of the two targets from the video-recordings, in which only the target (and not the participant) was visible. To check for reliability, a second observer coded 11 out of the 27 videotaped interviews (41%). The observers were different from the judges who rated the participants' behaviour. The two observers showed good agreement between the ratings of the general behavioural items (see below) with a correlation of $r(11) = .65, p < .05$ for the younger target and $r(11) = .57, p = .07$ for the older target. The quantitative ratings were correlated separately. In general, a good level of agreement between the two observers was found (number of smiles, $r(11) = .46, p > .05$ for younger and $r(11) = .74, p < .05$ for older target; number of errors, $r(11) = -.11, p > .05$ for younger and $r(11) = .28, p > .05$ for older target; number of hesitations, $r(11) = .43, p > .05$ for younger and $r(11) = .45, p > .05$ for older target, and the number of social comments,

$r(11) = -.18, p > .05$ for younger and $r(11) = .67, p < .05$ for older target). Given the generally high level of agreement between the two coders, ratings from the observer who coded all the targets was used in the subsequent analyses.

General ratings were made on the targets' friendliness, eye contact, abruptness/curtness of responses, level of comfort, level of interest, level of engagement, and average body posture. All ratings were made on a 9-point Likert-type scales, where a higher number indicated a more positive response (item on abruptness/curtness of responses was reverse scored). In addition, quantitative ratings were made on four items, specifically, the number of times the target smiled during the interview, the number of speech errors, the number of speech hesitations and the number of social, friendly comments made. The rating scales are shown in Appendix U. The mean ratings of the targets' behaviour as a function of target age are shown in Table 7.

Table 7: Mean Ratings and Standard Deviations for the Targets' Behaviour as a Function of the Target Age.

	Younger target	Older target
	<i>Mean (sd)</i>	<i>Mean (sd)</i>
General items		
Friendliness	6.81 (0.68)	6.52 (0.58)
Eye contact*	7.00 (0.78)	6.41 (0.57)
Abruptness/curtness	8.85 (0.36)	8.81 (0.40)
Level of comfort	6.70 (0.87)	6.52 (0.64)
Level of interest	6.89 (0.58)	7.00 (0.48)
Level of engagement	7.15 (0.36)	7.19 (0.56)
Body posture*	4.81 (0.48)	5.89 (0.75)
Quantitative items:		
Smiles*	10.07 (3.83)	5.78 (1.80)
Speech errors	1.30 (1.10)	1.41 (0.89)
Speech hesitations*	23.44 (5.97)	41.11 (8.53)
Social comments	0.22 (0.51)	0.07 (0.27)

Note. * = where significant differences between the younger and older target was found (independent t-tests; $p < .05$; see Appendix V for details).

A general positivity score was calculated by computing a mean of the spontaneous behaviour items (friendliness, eye contact, abruptness/curtness of responses, level of comfort, interest, and engagement, and body posture). Internal reliability coefficients for the younger and older workers separately showed relatively low levels of internal consistency, with $\alpha = .54$ for ratings of the younger target and $\alpha = .61$ for the ratings of the older target. A composite score was still calculated, however, to give a rating of the overall positivity of the behaviour of the two targets. Despite the extensive training of the confederates, the actual interview situations did lead to slightly different nonverbal behaviour from each. It is noteworthy, however, that the comparisons of the individual behaviours (see Table 7 above) revealed more positive behaviour by the younger confederate on some items (eye contact; speech hesitations) and more positive behaviour by the older confederate on other items (body posture). Overall, an independent sample t-test on the composite scores revealed no significant

difference in positivity for the two confederates ($M_s = 6.89$ vs. 6.90 ; $t(52) = -0.18$, $p > .05$, $\eta_p^2 = .00$). This suggests that any differences in evaluations of the confederates by the participants are unlikely to be due to differences in the actual behaviours of the confederates but rather due to differences in the attitudes of the participants.

Evaluation Questionnaires:

At the end of each interview, both the participant and the target evaluated one another on a number of items:

Target's ratings of the participant – The targets rated the participant on the following dimensions: eye contact, abruptness/curtness of responses, friendliness, level of comfort, interest and engagement towards the interviewing exercise, the target's own level of comfort, and the participant's average body posture. All ratings were made on 9-point scales, with lower numbers indicating more negative and higher numbers more positive behaviour. The ratings of abruptness/curtness of responses were reverse coded. The evaluation form is shown in Appendix W.

Judges' ratings of the participant – Each participant's behaviour was rated from the video-tape by two independent judges who were blind to the purpose and hypothesis of the study. The judges were different from those who rated the targets' behaviour described above. Each judge rated each participant on the following spontaneous behaviours: eye contact, abruptness/curtness of responses, friendliness, level of comfort, level of interest, level of engagement, and body posture. All ratings were made on 9-point scales, with lower numbers indicating more negative and higher

numbers more positive behaviour. The number of smiles, speech errors, speech hesitations and the friendly social comments the participant made were also counted, and the length of time the participant spend talking (above that of asking questions) was also recorded. The speaking time and social comments can be considered as controlled behaviours and the others as spontaneous behaviours. The time that the participant spent speaking, above that of reading the interview questions, was also recorded. The judges' rating scales are shown in Appendix X.

Participant ratings of the target – The participant rated the target on the following dimensions: competence, likelihood of hiring, recommending the target for the position, clarity of answers, competence with answering questions, overall friendliness, level of interest and the level of engagement in the interviewing exercise. In addition, the participant rated his/her own level of comfort during the interaction. Each item was rated on a 9-point scale, with lower numbers indicating more negative and higher numbers more positive evaluation. An exception to this format was the question on recommending the student for the position, which was responded to with a 'yes'/'no' response format. The participant was also given an opportunity to write down any additional comments about the target's interviewee skills and about suggestions for improvement. These questions were included to maintain the cover story, including that feedback would be given to the "student" later. The evaluation form is shown in Appendix Y.

Procedure

Participants were invited to take part in a study entitled “Opinions about employees with different characteristics”. Participants were tested individually. The research was said to include two unrelated studies, with the first study having two parts.

On arrival at the laboratory, the participant was provided with an Information Sheet outlining the purpose of the study (Appendix Z). After signing a consent form, the participants completed the explicit attitude measures (semantic differential and the feeling thermometer scales in a counterbalanced order), followed by the IAT.

A week to two months later¹¹ the participant returned to the laboratory for Part 2 of the first study. The participant was randomly assigned to either to the control or the experimental condition. He/she was then given the mental imagery instructions relevant to his/her condition. After the imagery task, the participant completed the same explicit attitude measures and the IAT as in part 1 of the study. The participant was then thanked by the first experimenter, and given directions to the location of the “second” study.

On arrival at the second laboratory, the participant was greeted by a second experimenter. The participant was given an Information Sheet outlining the purpose of the study (see Appendix AA). After signing the consent form, the participant was reminded that the purpose of the interviewing exercise was to give the Applied Psychology students some experience with pre-employment interviewing and hence

¹¹ The time between the measurement sessions did not influence any of the dependent variables and is therefore not considered further.

the interviewee (i.e., target only) would be videotaped for the purpose of giving feedback to the interviewee later. The participant was asked if he/she had any objections to this. If the participant was not comfortable with the video-recording, the interaction was not recorded. Two participants indicated that they were not comfortable with the video-recording, and therefore the study proceeded without the video-recording. The participant was then shown a sheet of class photographs which was developed for the purpose of the study (see Appendix AB). The sheet of photographs was included to give the impression that not all participants were interviewing the same targets. The photographs of the two targets were included in this sheet and the experimenter indicated that these two students would be the ones being interviewed by the participant.

The participant was then given a set of five interview questions, which he/she was instructed to become familiar with. The experimenter left the room to ostensibly see whether the first student to be interviewed had arrived. On the experimenter's return to the room, approximately 2 minutes later, the participant was given a further opportunity to ask questions. After responding to the participant's questions, the first interviewee was shown to the room. The student was either an older student (aged 53) or a younger student (aged 29). Both confederates were female, of European descent and of healthy weight, and were dressed in a similar, tidy manner. Neither confederate had anything distinctive about her appearance.

The experimenter instructed the participant to start the interview when he/she was ready and left the room. After the completion of the first interview, the target left the room, and without the participant's awareness, went to the room next door and

completed the evaluation sheet about the participant. At the same time, the experimenter asked the participant to evaluate and provide feedback for the target. The participant was told that all feedback would be given to the “student” in a summarised form and hence anonymity would be preserved. Once the participant had completed the feedback sheet, the experimenter gave him/her a second set of questions and the interview procedure was repeated with the second target. The order of the interviewees (older/younger target) and the question order (set 1/2) was counterbalanced between the participants.

Once the participant had completed the second feedback sheet, he/she was probed for suspicion regarding the true purpose of the study. Specifically, the experimenter asked whether there was anything unusual about the exercise. She also checked whether the participants knew either of the targets. One participant recognised one of the targets and was suspicious of the study. Her data was therefore excluded from the analysis. Finally, the experimenter who conducted the “first” study entered the room, recorded some demographic details, and thoroughly debriefed the participant (the debriefing sheet is shown in Appendix AC). None of the participants had made the link between the two studies. The debriefing included the experimenter explaining to the participant that he/she was actually video-taped during the interaction in addition to the interviewee (except for the two participants who were not video-recorded). The purpose of the video-taping was explained and details provided about the coding of the video-recordings that would take place. The participant was asked to sign a second consent form to indicate that they were happy for the videotaped material to be used. All participants were happy for the recorded material to be used. Finally, the participant was thanked and given a \$15 gift voucher for his/her participation.

The study was reviewed and approved by the University of Canterbury Human Ethics Committee.

Results

The mean responses for the Implicit Association Tests, the semantic differential and feeling thermometer scales and the Internal and External Motivation to Respond without Bias scores, as a function of condition, time and target group are shown in Table 8.

As the participant's age did not influence any of the dependent variables, it is not considered further in the analysis.

Table 8: The Mean Responses for the IAT and the Explicit Attitude Scales, as a Function of Condition, Time and Target.

Measure	Time 1		Time 2	
	Experimental <i>Mean (sd)</i>	Control <i>Mean (sd)</i>	Experimental <i>Mean (sd)</i>	Control <i>Mean (sd)</i>
IAT	0.39 (0.35)	0.37 (0.34)	0.39 (0.36)	0.39 (0.36)
SD Younger	67.38 (8.19)	66.87 (11.43)	69.44 (9.43)	69.18 (10.97)
SD Older	65.01 (9.13)	60.82 (8.94)	69.84 (8.37)	67.03 (10.44)
SD ds	2.36 (6.86)	6.05 (13.18)	-0.39 (7.67)	2.15 (10.08)
FT Younger	77.34 (9.82)	76.73 (10.47)	74.36 (11.14)	76.07 (11.59)
FT Older	64.57 (24.57)	74.80 (10.19)	73.64 (13.61)	70.07 (14.47)
FT ds	12.79 (24.66)	1.93 (15.31)	0.74 (15.56)	6.00 (9.57)

Note. IAT = Implicit Association Test; SD = Semantic differential scale; FT = Feeling thermometer scale; ds = difference score between younger and older workers.

Implicit Attitudes (IAT)

As with the previous studies, the IAT data was analysed using the improved algorithm recommended by Greenwald et al. (2003). A positive IAT score represents a positive evaluation of younger, relative to older, workers, and a negative IAT score represents a more positive evaluation of older, relative to younger, workers. The higher the number in either direction, the stronger the evaluation. Preliminary analysis on the block order (congruent/incongruent first) showed no influence on the IAT effects and was therefore excluded from subsequent analyses. The mean error rates were <10% and similar to those in previous studies and are not considered further.

Single-sample t-tests were computed to test whether there was significant bias on the IAT. Bias scores in each condition at each testing time were compared to zero (i.e., no difference in general affect toward older and younger workers). Significant bias was revealed for both groups at both times (Control, Time 1: $t(14) = 4.17, p < .05$; Time 2: $t(14) = 4.10, p < .05$; Experimental, Time 1: $t(13) = 4.21, p < .05$; Time 2: $t(13) = 4.00, p < .05$).

A 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA on the IAT bias scores, with time as a repeated measures factor, revealed no significant effects.

Semantic Differentials (SD)

Similar to Studies 2a/b, all items were coded so that higher scores represent more positive evaluations. The internal reliabilities for both the older worker and the younger worker scales were satisfactory, with Cronbach's alpha reliability coefficients of .75 and .81 respectively. The items in each scale were collapsed into a single score, one for the older worker scale and another for the younger worker scale.

As shown in Table 8, the responses on the SD scales were positive overall (i.e., above the midpoint of the scales) for both the older and younger workers and in both conditions. For purposes of comparability with the relative implicit measure, difference scores were calculated between younger and older workers. Positive scores indicate more positive evaluations of younger, relative to older, workers and negative scores indicate more positive evaluations of older, relative to younger, workers. The higher the score, the greater the difference between the evaluations of older and younger workers.

Single-sample t-tests were computed to test whether there was significant bias on the SD responses for each condition at each time of testing. No significant differences were found for either condition at either time, indicating that overall, no significant bias was evident as measured by the semantic differential scales.

A 2 (Condition: control/experimental) x 2 (Time: 1/2) ANOVA was conducted on the SD difference scores, with time as a repeated measures factor. A marginally significant main effect of time was found, $F(1, 27) = 3.29, p = .08, \eta_p^2 = .11$, such that the evaluations were more positive towards younger workers, relative to older,

workers at time 1 as compared with time 2 ($M_s = 4.27$ vs. 0.92). No other significant effects were found.

Feeling Thermometers (FT)

As in Studies 2a/b, the participants' affective responses towards older and younger workers were measured using two separate feeling thermometer scales. The scales ranged from 0 to 100, where a higher number indicated more positive feelings towards the group.

As with the semantic differential scales, the responses towards older and younger workers were positive overall (i.e., above the midpoint of the scale) (see Table 8). To investigate the relative evaluations, difference scores were calculated between older and younger workers. Positive scores indicate a more positive evaluation of younger, relative to older, workers, and negative scores indicate a more positive evaluation of older, relative to younger, workers.

Single-sample t-tests were computed to test whether there was significant bias on the FT responses for each condition at each time of testing. Marginally significant bias was found for the experimental condition at time 1 ($t(13) = 1.94, p = .07$), and significant bias was found for the control condition at time 2 ($t(14) = 2.43, p < .05$).

A 2 (Condition: experimental/control) x 2 (Time: 1/2) ANOVA with time as a repeated measures factor was computed on the FT difference scores. A significant time by condition interaction was found, $F(1, 27) = 6.08, p < .05, \eta_p^2 = .18$ – see

figure 4 below. Post-hoc tests (Tukey, $p < .05$) showed there to be no differences in scores as a function of the condition or as a function of time, although the difference between the measurement times for the experimental group approached significance. More positive evaluations were given to the younger, relative to older, workers at time 1 as compared with time 2 ($M_s = 12.79$ vs. 0.71 , $p = .07$).

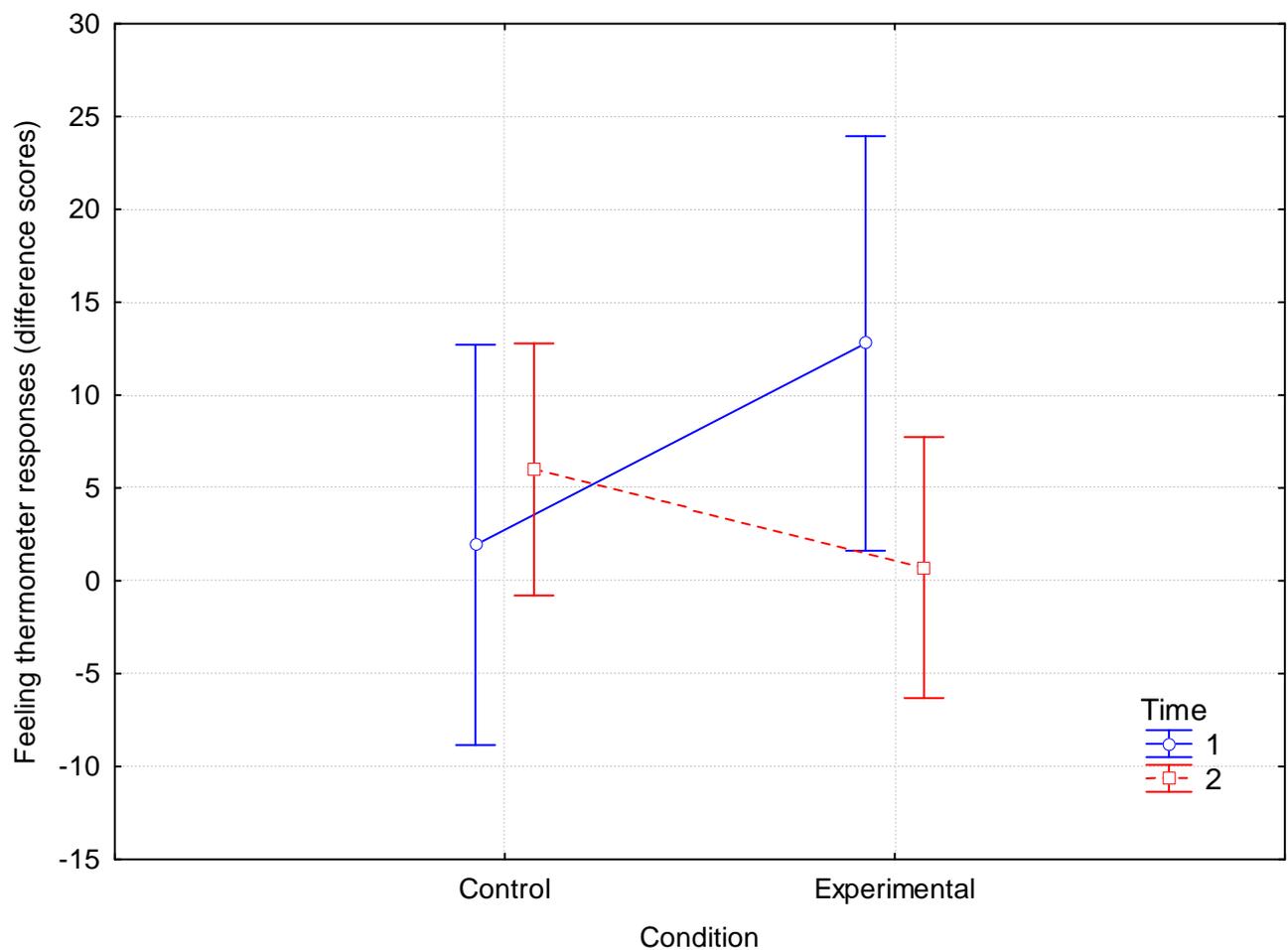


Figure 4: Feeling thermometer difference scores as a function of condition and time.

Relationships between the attitudinal variables

Pearson Product-Moment correlation coefficients were calculated to investigate the relationships between the dependent measures at time 1 and time 2 as a function of

experimental condition. Difference scores between the ratings of younger and older workers were used for the semantic differential and feeling thermometer measures, such that a positive number indicates a more positive evaluation of younger, relative to older, workers. Correlations were calculated separately for the two conditions to investigate the influence of the mental imagery intervention on the measures. The correlations are shown in Table 9. Correlations above the diagonal are for the experimental condition and correlations below the diagonal are for the control condition. As with previous studies, due to the high number of pairwise comparisons, a more conservative p -value of .01 was applied. However, as the small sample size in the present study resulted in relatively low power for detecting statistically significant relationships, correlations indicative of a large effect size (i.e., $r \geq .50$; Cohen, 1988; 1992) were also interpreted (all correlations indicative of large effects had $p < .10$).

For the control group, no significant correlations between the attitudinal measures were found. However, correlations indicative of a large effect size were found for the semantic differential difference scores between times 1 and 2 ($r = .60$) and for the IAT responses between times 1 and 2 ($r = .57$).

No statistically significant correlations between the attitudinal variables were found for the experimental group. However, correlations indicative of large effect size were found for the participants' feeling thermometer difference scores between times 1 and 2 ($r = .60$) and for the IAT responses between times 1 and 2 ($r = .52$).

Table 9: Correlations between the Attitudinal Dependent Measures and the Motivation Scales for the Experimental and the Control Conditions.

Measure	1	2	3	4	5	6
1. SD Time 1	-	.28	.19	.22	.15	.32
2. SD Time 2	.60 ^a	-	.03	.19	.44	.40
3. FT Time 1	.20	.14	-	.60 ^a	-.16	-.00
4. FT Time 2	.46	.16	.31	-	-.27	.20
5. IAT Time 1	.12	-.10	.37	-.19	-	.52 ^a
6. IAT Time 2	.21	.37	.21	-.08	.57 ^a	-

Note. Correlations above the diagonal are for the experimental condition ($N = 14$), and correlations below the diagonal are for the control condition ($N = 15$). SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers.

^a = correlation indicative of a large effect size.

Behavioural data analyses

The participants' behaviour was evaluated by the targets and by two independent judges who evaluated the participants' behaviour from video-recordings.

Judges' ratings – Two participants did not consent for the interview session to be recorded, and further one participant recognized one of the targets and was suspicious as to the purpose of the study. Therefore the sample for the judges' ratings was $n = 26$. The judges made both general (7 items; eye contact, abruptness/curtness of responses, friendliness, level of comfort, level of interest, level of engagement, and body posture) and quantitative ratings (5 items; speaking time, number of smiles, speech errors, speech hesitations and the number of social, friendly comments) of the participants' behaviour from the video-recordings. The general ratings corresponded to spontaneous behaviours, whereas the quantitative ratings included both controlled

(i.e., verbal; speaking time and social comments) and spontaneous behaviours (i.e., smiles, speech errors and hesitations). Each of the general items was scored so that a higher rating indicated a more positive response. After reverse scoring the appropriate item (abruptness/curtness of responses), inter-judge correlations were calculated for each of the behaviours, separately for the interviews with the younger and the older target. The inter-rater correlations are shown in Table 10. Interviews with the younger target showed good inter-rater correlations for all of the quantitative ratings and for six of the seven general behavioural items. Interviews with the older target showed good inter-rater correlations for all of the quantitative ratings and five of the seven general behavioural items. For the interviews with both the older and the younger target, low inter-rater agreement was found for the item of 'engagement', resulting in the exclusion of the item from the computation of the composite score. Further, for the interviews with the older target, a low inter-judge agreement was found with the item of abruptness/curtness of participants' responses. Given the number of items for which there was high agreement across judges it was decided to also exclude this item.

A reliability analysis was conducted for the remaining five general behavioural items, separately for the interviews with the younger and the older target. The items showed acceptable internal consistency with Cronbach's alpha reliability coefficients of .72 and .77 for the general ratings of the participant with the younger and older target ratings respectively. A composite score of the general (i.e., spontaneous) behaviours was therefore calculated, one for ratings of the participant interviewing the younger and one for ratings of the participant interviewing the older target. The quantitative ratings were analysed separately as the scores could not be combined in a logical

manner. That is, the scales had no upper limits to them and the items could not be coded so that higher number would always indicate a same direction of response (e.g., a more positive response).

Table 10: Inter-Judge Correlations for the Ratings of the Participants' Behaviour as a Function of the Target.

Interview with:	Younger target	Older target
General ratings		
Eye contact	.57**	.77**
Abruptness/curtness	.43 ^a	.17 ^a
Friendliness	.45*	.62**
Comfort level	.57**	.58**
Interest level	.49*	.61**
Engagement level	.22 ^a	.38 ^a
Body posture	.66**	.59**
Quantitative ratings		
Speaking time	.84**	.64**
Smiles	.68**	.60**
Speech errors	.89**	.56**
Speech hesitations	.49*	.78**
Friendly, social comments	.55**	.40*

Note. $N = 26$.

* $p < .05$. ** $p < .01$. ^a = not included in the calculation of the composite score.

Targets' ratings - As one participant was suspicious as to the purpose of the study and the participant was therefore excluded from all analysis involving behavioural data, the sample for the targets' ratings was $n = 28$. Each item was scored so that a higher rating indicates a more positive response. Following the reverse scoring of the appropriate item (abruptness/curtness of responses), a reliability analysis was conducted on the eight behavioural items. Both the older and the younger targets'

ratings showed good internal reliability, with Cronbach's alpha reliability coefficients of .86 and .89 for the younger and older targets' ratings respectively. The eight items, all measures of spontaneous behaviours, were therefore combined into a single composite score, one for the younger and one for the older targets' ratings.

The mean ratings of the participants' behaviour, and difference scores (younger – older target) by the judges and the targets as a function of the experimental condition, interview order (younger/older target first) and the target (younger/older) are shown in Table 11.

As the question set order had no influence on any of the dependent variables, this factor was not considered in the analyses.

Table 11: The Mean Ratings and Difference Scores of the Judges' and Targets' Ratings of the Participants' Behaviour, as a Function of Target, Interview Order and Condition.

Interview order:	Control		Experimental	
	Younger 1 st	Older 1 st	Younger 1 st	Older 1 st
	<i>Mean (sd)</i>	<i>Mean (sd)</i>	<i>Mean (sd)</i>	<i>Mean (sd)</i>
Ratings by:				
Judges of participant with younger target	6.40 (0.54)	7.24 (0.17)	5.98 (0.99)	6.23 (1.04)
Judges of participant with older target	6.60 (0.71)	7.11 (0.44)	6.29 (1.15)	5.80 (1.40)
Judges' Difference score	-0.20 (0.50)	0.13 (0.40)	-0.31 (0.56)	0.43 (0.79)
Younger target of the participant	6.41 (1.25)	7.00 (1.10)	6.52 (0.85)	6.84 (0.72)
Older target of the participant	6.29 (0.78)	6.23 (1.25)	6.10 (1.06)	5.68 (0.92)
Targets' difference score	0.13 (0.68)	0.77 (0.59)	0.42 (0.69)	1.16 (1.17)

Note. The judges' mean ratings include only the general behavioural ratings. The ratings of/by the younger and older targets are presented as difference scores so that a positive number indicates a more positive evaluation of/by the younger, relative to the older, target.

Ratings of the participant: Judges' ratings

A 2 (Participant condition: control/experimental) x 2 (Target: older/younger target) x 2 (Interview order: older/younger target first) ANOVA was conducted on the judges' general ratings of the participants' behaviour with the target as the repeated measures variable. A significant interaction of target by interview order was found, $F(1, 22) = 5.65, p < .05, \eta_p^2 = .20$ - see figure 5. Post-hoc tests (Tukey, $p < .05$) showed there to be no significant differences either as a function of the target or the interview order.

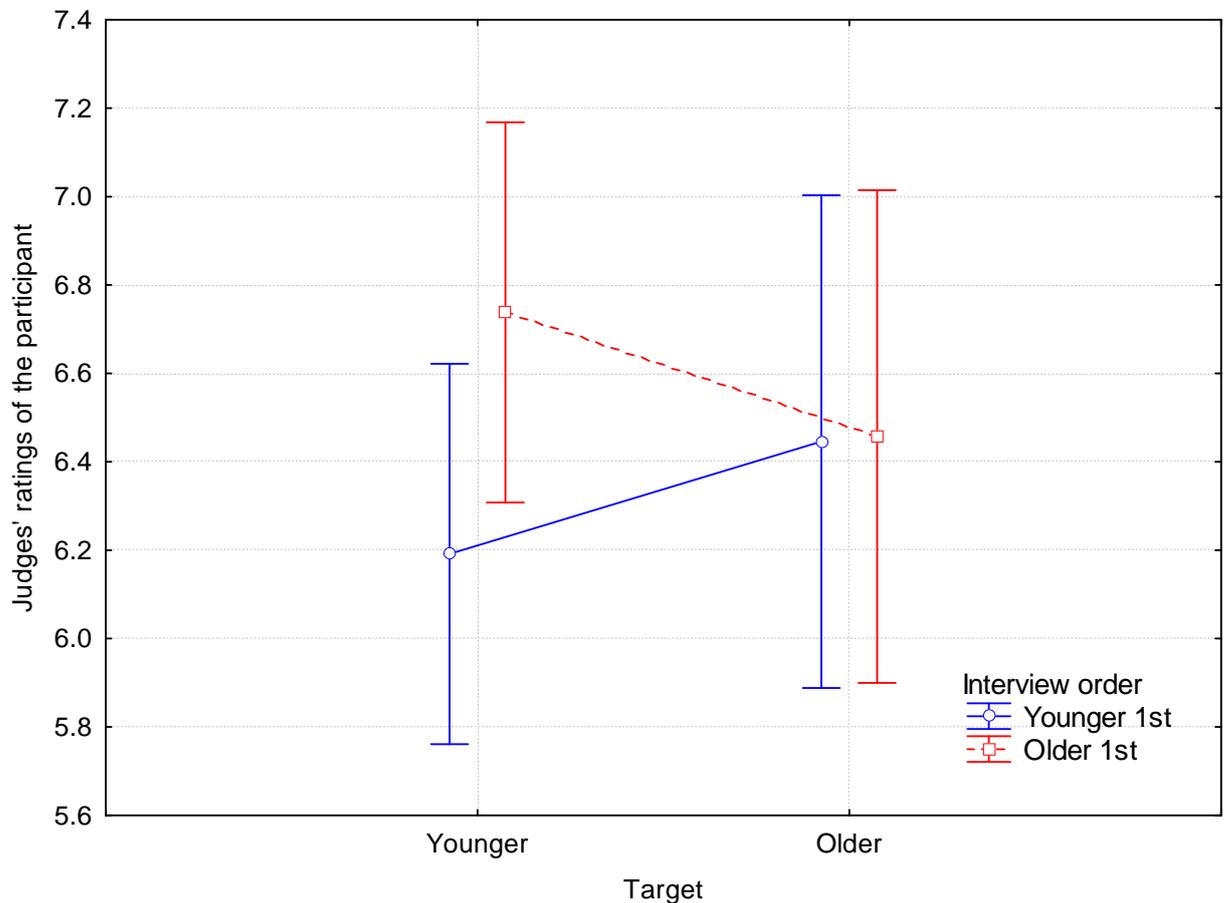


Figure 5: Judges' ratings of the participants as a function of the targets' age and the interview order.

Separate 2 (Participant condition: control/experimental) x 2 (Target: older/younger target) x 2 (Interview order: older/younger target first) ANOVAs were conducted on the judges' ratings of each of the participants' quantitative behaviours. The only analysis to yield a significant effect was in the case of smiling where there was a main effect of target, $F(1, 22) = 16.42, p < .05, \eta_p^2 = .43$. The participants were rated as smiling more when interviewing the younger than the older target ($M_s = 8.83$ vs. 6.62).

Ratings of the participant: Targets' ratings

A 2 (Participant condition: control/experimental) x 2 (Target: older/younger) x 2 (Interview order: older/younger target first) ANOVA was conducted on the targets' ratings of the participant with the Target as a repeated measures factor. A significant main effect of target was found ($F(1, 24) = 15.99, p < .05, \eta_p^2 = .40$), qualified by a significant target by interview order interaction, $F(1, 24) = 5.03, p < .05, \eta_p^2 = .17$ - see figure 6. Post-hoc tests (Tukey, $p < .05$) revealed a significant effect of target when the older target was interviewed first, with the younger target giving higher ratings to the participants than did the older target ($M_s = 6.93$ vs. 5.98). No difference was found when the younger target was interviewed first and there were no differences as a function of interview order for either the younger or the older target.

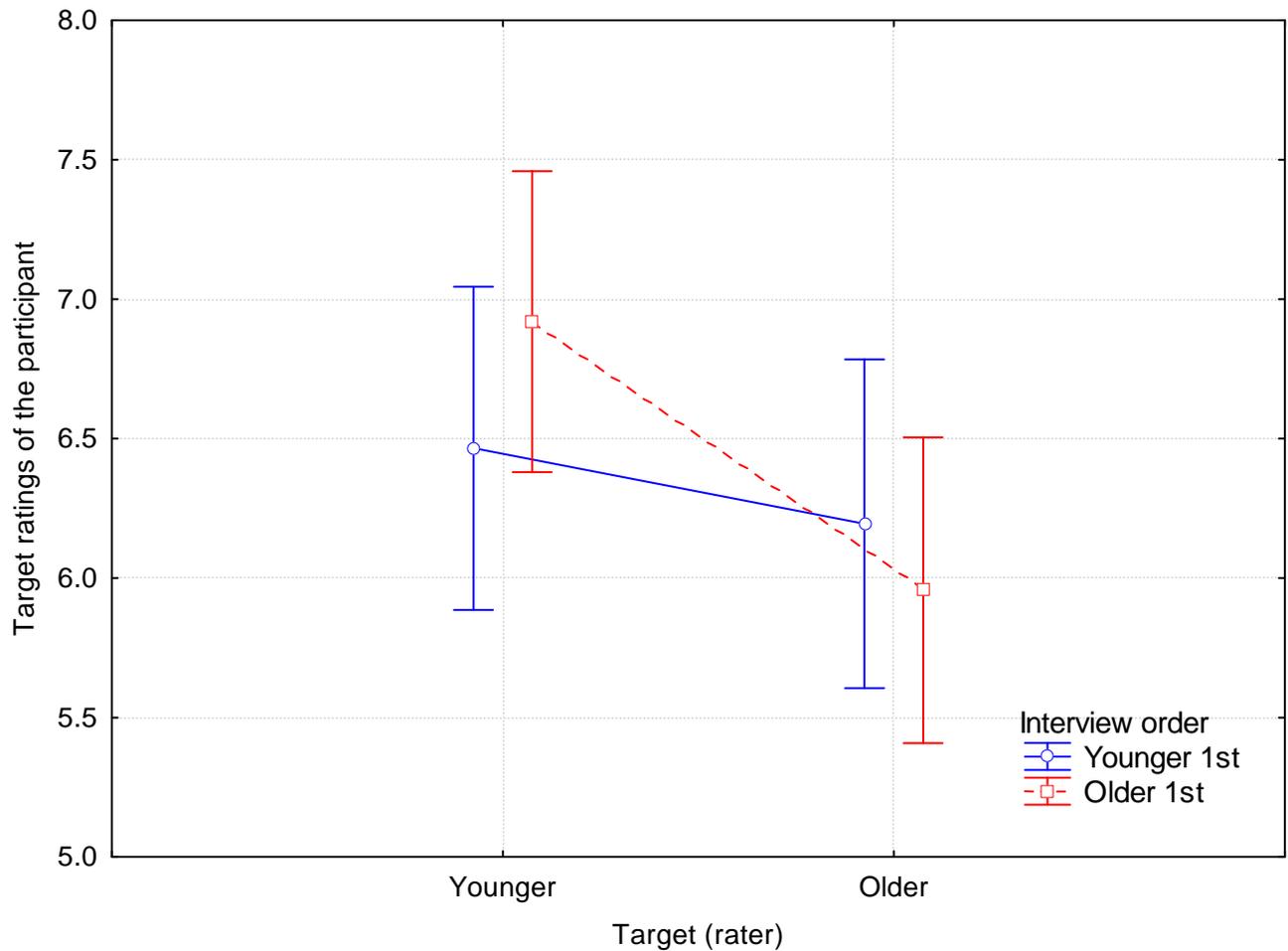


Figure 6: The targets' ratings of the participant as a function of the target and the interview order.

Relationships between the attitudinal and behavioural variables

To investigate the relationships between the attitudinal variables and the behavioural ratings of the participant, Pearson Product-Moment correlation coefficients were calculated between the attitudinal difference scores and the behavioural difference scores as a function of condition. The behavioural difference scores were calculated using the composite scores (i.e., spontaneous behaviours) and for the quantitative ratings (i.e., including both controlled and spontaneous behaviours), so that a positive number indicates a more positive evaluation of the younger, relative to the older,

target, and a negative number a more positive evaluation of the older, relative to the younger, target. Correlations were calculated separately for the two conditions to investigate the influence of the experimental manipulation on the relationships between the attitudinal and behavioural measures. Only the attitude measures completed at time 2 were considered in this analysis. Time 2 attitude measures were those that were completed in the same session as when the interviews took place. Further, the relationships were investigated separately for the ratings by the targets and the independent judges.

The relationships for the control group are considered first, followed by the experimental group. The comparisons between the two conditions ratings will then be discussed. Table 12 shows the correlations between the evaluations of the participants by the judges and targets and the attitudinal variables at time 2. In addition, the correlations between the judges' quantitative ratings and the attitudinal variables at time 2 are shown in Table 13.

Table 12: Correlations between the Ratings of the Participant by the Judges and the Targets and the Attitudinal Variables at Time 2, as a Function of Condition.

Ratings by:	Control condition		Experimental condition	
	Judges (n=14)	Targets (n=15)	Judges (n=12)	Targets (n=13)
Semantic differentials	-.52 ^a	.68*	.29	.09
Feeling thermometers	-.25	-.13	.09	-.28
IAT	-.45	.13	.39	.08

Note. IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers.
* $p < .01$. ^a = correlation indicative of a large effect size.

Table 13: Correlations between The Judges' Quantitative Ratings of the Participant's Behaviour and the Attitudinal Variables at Time 2, as a Function of Condition.

	Control condition			Experimental condition		
	SD	FT	IAT	SD	FT	IAT
Speaking time	.01	-.22	-.65 ^a	.23	-.17	-.29
Smiles	.15	.12	-.18	.25	.01	.00
Speech errors	.38	-.05	.17	-.33	-.21	-.52 ^a
Speech hesitations	.07	.22	.38	.09	.12	-.20
Social comments	-.02	.10	-.33	.02	-.44	-.16

Note. SD = semantic differential scales; FT = feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers.

^a = correlation indicative of a large effect size.

Control condition

A negative relationship indicative of a large effect size were found between the judges ratings of the control group participants and the semantic differential difference scores ($r = -.52$). The more positive the evaluations of younger, relative to older, workers on the semantic differential scales, the less positive were the judges' ratings of the participants' behaviour towards the younger, relative to the older, target. For the quantitative ratings, the IAT was negatively correlated with the participants' speaking time ($r = -.65$) such that the more positive the implicit attitudes towards younger, relative to older, workers, the shorter was the speaking time by the participants when interviewing the younger, relative to the older, target. The item level correlations are shown in Appendix AD (table i).

For the targets' ratings of the control group participants, a significant positive correlation was found between the participants' semantic differential difference scores and the targets' ratings ($r = .68$), such that the more positive evaluations of younger,

relative to older, workers, the more positive did the younger target rate the participant's behaviour than did the older target. The item level correlations are shown in Appendix AD (table ii).

The strength of the correlations between the judges' ratings and the participants' attitudes, and the targets' ratings and the participants' attitudes were compared. A significant difference was found for the control group participants. The correlation between the semantic differential scales and the judges' ratings was negative, whereas the correlation between the semantic differential scales and the targets' ratings was positive ($-.52$ vs. $.68$, $p < .01$).

Experimental condition

No significant correlations or correlations indicative of large effects were found for the judges' ratings of the experimental group. However, there was a correlation indicative of a large effect size between the IAT score and the ratings of the participants' speech errors ($r = -.52$), such that the more positive the implicit attitude toward younger, relative to older workers, the fewer speech errors were made by the participant when interviewing the younger, relative to the older, target. The item level correlations are shown in Appendix AE (table i).

For the targets' ratings, no significant correlations or correlations indicative of large effect size were found. The item level correlations are shown in Appendix AE (table ii). The strength of the correlations between the judges' ratings and the participants' attitudes, and the targets' ratings and the participants' attitudes were compared. No differences were found.

Comparison between the conditions

The comparison of the strength of the correlations between the attitudinal variables and the behavioural ratings by the judges in the control and the experimental conditions revealed a significant difference for correlations with the IAT scores, where a positive correlation was found in the experimental group and a negative correlation in the control group ($r = .39$ vs. $-.45$, $p < .05$). That is, the more positive the implicit evaluation of younger, relative to older, workers, the more positive were the ratings of the younger, relative to older workers for the experimental group, but the less positive were the ratings by the control group. No other significant differences between the conditions were found.

Participants' ratings of the targets

Although the focus of the study was on the participants' behaviour, the participant also evaluated the targets. The main purpose of such an exercise was to maintain the cover story that the participants were part of an interview exercise which purpose was to offer experience for the applicants. However, an analysis was conducted to see whether the participants evaluated the targets differently. Each item was scored so that a higher rating indicated a more positive response. One item, recommending the target for the position, had a response format of yes/no. Due to the lack of variability in the responses (only one participant responded 'no' to the item, in reference to the younger target), the item was not analyzed further. A reliability analysis was conducted on the eight remaining items. Both the ratings of the older and the younger targets showed good internal reliability, with Cronbach's alpha reliability coefficients of .88 and .87 for the ratings of the younger and older targets respectively. The eight items were

combined into a single composite score. The mean responses by the participants' ratings of the targets as a function of the experimental condition and target are shown in Table 14 below. As with the ratings of the participant, the question set order had no influence on any of the dependent variables and therefore this factor was not considered any further.

Table 14: The Mean Ratings of the Targets' Behaviour by the Participants as a Function of Target and Condition.

	Experimental	Control
	<i>Mean (sd)</i>	<i>Mean (sd)</i>
Participant of the younger target	7.57 (0.73)	7.47 (0.78)
Participant of the older target	7.78 (0.62)	7.61 (0.78)
Difference score	-0.21 (0.56)	-0.14 (0.53)

Note. The difference score was calculated so that a positive number indicates a more positive evaluation of the younger, relative to older, target.

A 2 (Participant condition: control/experimental) x 2 (Target: older/younger) x 2 (Interview order: older/younger target first) ANOVA was conducted on the participants' ratings of the targets with the target as a repeated measures variable. No significant effects were found. The correlations between ratings of the targets' behaviour and participants' attitudes and the item level correlations are shown in Appendix AF (Tables i and ii).

As the participants' evaluations of the targets can be considered as controlled type behaviour, correlations were also calculated between the participants' evaluations of the targets and the targets' evaluations of the participants. No significant correlations

or correlations indicative of strong effect size were found. The table of correlations can be found in Appendix AG.

Discussion

The present study investigated the relationship between implicit and explicit attitudes and behaviour towards younger and older job applicants. The participants' implicit and explicit attitudes towards younger and older workers were measured on two occasions, pre- and post-intervention, to further investigate the malleability of such attitudes. Following the second attitude measurement time, the participants took part in an ostensible pre-employment interview exercise, where both a younger and an older target (i.e., "applicant") were interviewed. The participants' spontaneous and more controlled behaviours were assessed. Evaluations of the participants' behaviour were obtained from the targets and independent observers.

Implicit and explicit measures of attitudes

Based on the previous studies' findings, it was expected that negative implicit attitudes towards older, relative to younger, workers would be found. As expected, bias was found, replicating the findings from the previous three studies.

As in the preceding studies, the mental imagery intervention had no effect on the participants' implicit attitudes, suggesting that implicit attitudes towards older, relative to younger, workers were unaffected by experimental manipulation used in

the present study. The nature of the experimental manipulation and the lack of malleability will be considered in the General Discussion.

Similar to the bias found on the implicit measure of attitudes, the present study also found that negative attitudes towards older workers were evident in the explicit measures. Specifically, negative attitudes towards older, relative to younger, workers was evident in the semantic differential scales at time 1, and further, the experimental group participants also showed bias on the feeling thermometer scales at time 1. Such bias is consistent with previous research showing negative explicit attitudes towards older workers (Loretto, Duncan, & White, 2000; McGregor & Gray, 2001, 2002; Richardson, Webber, Smith, & Webb, 2007; Rosen & Jerdee, 1976). Although the control group participants showed no bias on the feeling thermometer scale at time 1, the means were in the direction of bias against older, relative to younger, workers.

At time 2, following the mental imagery intervention, bias was not evident in the semantic differential scales for either condition. For the feeling thermometer responses, the experimental group participants who had shown bias at time 1, no longer showed bias at time 2. The changes observed in the experimental group's feeling thermometer responses provide some evidence that explicit attitudes were influenced by the experimental manipulation. Why the difference was only observed in the feeling thermometer responses is intriguing. It is possible that overall, affect-based responses (as measured by the feeling thermometer scales) were influenced by the intervention, as opposed to the more specific items included in the semantic differential scales.

In sum, negative implicit attitudes were found towards older, relative to younger, workers. Consistent with previous studies, the mental imagery intervention did not influence implicit attitudes. The results also showed evidence for negative attitudes towards older, relative to younger, workers on the explicit measures, and some support for the malleability of explicit attitudes was found.

Relationships between the attitudinal variables

Each individual attitude measure showed a positive correlation between the two assessment times. For the control group, all attitude measures showed medium to large effect sizes between times 1 and 2, indicating that the measures used, both implicit and explicit, were relatively reliable measures of attitudes, consistent with past research (e.g., Greenwald et al., 2002). For the experimental group, the relationships between times 1 and 2 measurement varied from small to medium effect sizes. Surprisingly, the strongest correlation was between the times 1 and 2 feeling thermometer responses where a significant change from time 1 to 2 was found. A closer examination of the correlations revealed however that one participant's score was influencing the strength of the correlation - when excluding the participant, the correlation was indicative of a small effect size. Such weak correlation is consistent with the influence of the mental imagery manipulation on the feeling thermometer responses.

As expected, the relationships between implicit and explicit attitudes were generally weak. Specifically, none of the correlations between implicit and explicit attitudes reached significance and the correlations were indicative of medium effect sizes, at

best. This was true for both the control and the experimental conditions. The findings are consistent with those of previous research investigating attitudes towards older individuals in general, that have shown weak implicit-explicit attitude relationships (Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001). The results therefore suggest that people's attitudes towards older workers reveal different information, depending on the attitude measure used. That is, the bias seems to be stronger with implicit measures of attitudes, whereas if only using explicit measures of attitudes, one may conclude that such bias was not particularly strong. The finding highlights the importance of using both implicit and explicit measures of attitudes in the context of older workers, as both can produce relatively independent information from one another. The results also provide further evidence for conceptualising implicit and explicit attitudes as at least partly distinct constructs (Greenwald & Nosek, 2008; Nosek & Hansen, 2008).

Behavioural results

The participants' behaviour was rated by two sources, the targets being interviewed and independent judges who evaluated the participants' behaviour from video-recordings. The analyses were conducted separately for these two rating sources as it was possible there may have been important differences between them. Indeed, past research has suggested that individuals involved in interactions provide different types of judgements as compared to individuals observing the interaction (Gilbert & Krull, 1988).

The evaluations of the participant's behaviour showed that when the older target was interviewed first, the younger target gave more positive ratings of the participant than

did the older target. It was only during the second interview that the effect was found and only for the ratings of the younger target. Although the targets' ratings suggest that the participants behaved in a more positive manner towards the target in the second interview, the interview order alone cannot explain the pattern of results fully as when the younger target was interviewed first, the older target did not rate the participants more positively than the younger target. It can be speculated that following the interview with the older target, the participants were perceived as behaving in a more positive manner by the younger target due to the contrast the participants may have perceived between the younger and the older target. However, interviewing the younger target first may not have resulted in such a contrast effect, as the older target may not have been perceived more positively following the interaction with the younger target. In addition to the more positive ratings given by the younger target during the second interview, the participants were recorded as smiling more when interviewing the younger target. It should be noted however, that the younger target was also found to smile more as compared to the older target when the two targets' behaviour was compared, although this did not influence the general positivity score (of spontaneous behaviours) of the target. The causality of the relationship between the participants' and targets' smiling, whether the participant smiled more simply as a response to the target smiling or whether the participants' smiles caused the target to smile more, cannot therefore be established.

Overall then, the results showed some indication that the participants behaved in a more positive manner towards the younger, relative to the older, target. The findings that the participants smiled more in the presence of the younger target, and that the younger target gave more positive evaluations in the second interview than did the

older target, are consistent with previous research showing youth bias in relation to job candidates (P. Taylor & Walker, 1994; M. Wilson & Kan, 2006). Such findings are also consistent with the results of the implicit attitude measure that showed more positive attitudes towards younger, relative to older, workers. However, as only limited evidence was found for bias on the behavioural level in the present study, strong conclusions cannot be drawn.

The relationships between attitudes and behaviour

It was expected that positive relationships would be found between the attitude measures and the ratings of the participants' behaviour. Specifically, it was expected that the implicit measure of attitudes would primarily be related to spontaneous, nonverbal behaviours (such as eye contact, smiling, friendliness, the participant's level of comfort and interest) and paralinguistic behaviours (i.e., speech errors and hesitations), and that the explicit measures of attitudes would be related to more controlled behaviour, that is, verbal behaviours (including speaking time and the number of social comments made) and the participants' ratings of the targets (including questions on whether the target would be offered the position, how competent and friendly they were). It was also of interest whether the changes in explicit attitudes as a function of the mental imagery intervention (as found in Study 2a) could also be observed in the participants' subsequent behaviour.

For the control group, both expected and unexpected relationships were found. The relationship between the judges' ratings of the participants' behaviour and the participants' semantic differential responses was in the unexpected direction - more

positive attitudes towards younger, relative to older, workers were related to less positive behaviour towards the younger, relative to the older, target. Such a negative relationship was also evident between the IAT responses and the participants' speaking time. The opposite pattern was found for the targets' ratings of the control group participants' behaviour. Specifically, the more positive evaluations of the younger, relative to older, workers, more positive were the ratings given by the younger, relative to the older, target. The two sources' ratings therefore showed a differential relationship with the participants' attitudes. It is plausible that those participants who responded less favourably towards older workers in the semantic differential scales wished to compensate such ratings by showing more positive behaviour towards the older target, resulting in the unexpected relationship with the judges' ratings. Such compensatory effect has also been found in previous research (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Yabar et al., 2006). As the targets' ratings showed the opposite pattern, it is plausible that the targets still perceived bias, beyond the compensation efforts that successfully hid bias from the judges. The targets' and judges' ratings showed some indication that they perceived the participants' behaviour somewhat differently, indicated by the more positive difference scores in the ratings made by the targets. It can be argued that as the targets were likely to have been more invested in the interaction than the judges were, the targets may have been more perceptive of the participants' behaviour. It can also be argued that the interaction partner's perception is more important than those of observers. For example, an older job applicant perceiving an interviewer's behaviour negatively can influence the performance of the older applicant, whereas an observer's perception of the interview situation is less likely to bear significant consequences. It can therefore be argued that relationship found between the targets'

ratings of the participant and the participants' semantic differential responses is more important than the unexpected relationship found with the judges' ratings. In addition, a noteworthy consideration is that the judges rated the participants when interviewing both the younger and the older target. However, the targets naturally only rated the participant when they were themselves being interviewed. Therefore direct comparison between the targets' and judges' ratings should be interpreted with caution.

The experimental group participants' attitudes were largely unrelated to both spontaneous and controlled behaviours. The responses on the IAT showed the predicted relationship with the judges' ratings such that those with more positive implicit attitudes towards younger, relative to older, workers, made fewer speech errors (i.e., paralinguistic, spontaneous behaviour) when interviewing the younger, relative to the older, target. The targets' ratings showed no significant relationships or relationships indicative of large effect size for the experimental group. That less evidence for the attitude-behaviour relationship was found for the experimental group participants is intriguing. It is plausible that the mental imagery exercise dissociated the experimental group participant's attitudes from behaviour, such that the exercise may have increased salience of social norms for equity for the participants and their behaviour was therefore comparable between the younger and the older target.

In addition, the participants' responses on the IAT and the judges' ratings of the participants' behaviour differed as a function of condition. Specifically, the relationship between the ratings of the participants' behaviour and their responses on the IAT was in the expected direction for the experimental group (i.e., those with

more positive attitudes towards younger, relative to older, were rated as showing more positive behaviour towards younger, relative to the older, target), whereas the relationship was in the unexpected direction for the control group participants. The unexpected direction of the relationship for the control group is consistent with the above discussed finding regarding the responses on the semantic differential scales. As speculated above, those participants who showed less positive attitudes towards older workers may have tried to compensate such negative responses when interacting with the older target. For the experimental group however, the influence of the increased social norms of equity (resulting from the mental imagery exercise) may not have influenced the implicit attitudes as the influence of implicit attitudes on behaviour would have been more difficult to control. It should be noted however that neither correlation (i.e., between the IAT and the judges' ratings of the control or experimental group participant's behaviour) reached significance and were of medium effect size only.

The present study's findings have some similarities to those of McConnell and Leibold's study (2001). In their study, participants interacted with both African American and European American experimenters (actually confederates). The participants' behaviour was evaluated by the confederates as well as by independent judges who evaluated the participants' behaviour from video-recordings. McConnell and Leibold (2001) found that the explicit measure of attitudes was significantly related with the experimenters' (i.e., confederates') ratings of the participants' behaviour, whereas the judges' ratings were not. Although the judges' ratings did show a relationship with the semantic differential scores in the present study, it was in

the unpredicted direction. The findings suggest that in the context of older workers, the interaction partner's explicit attitudes may be predictive of their behaviour.

In contrast, the lack of significant relationships between the participant's behaviour and the implicit measure of attitudes is inconsistent with previous research that has found a relationship between participants' implicit attitudes and behaviour (Dasgupta & Rivera, 2006; Dovidio et al., 2002; Dovidio et al., 1997; McConnell & Leibold, 2001). McConnell and Leibold (2001), for example, found that the participants' implicit attitudes were related to the confederates' ratings of the participants' behaviour. The implicit attitudes were also related to some specific social behaviours (such as speaking time and smiling) as rated by independent observers from video-recordings of the interaction. The findings are in contrast to the present study. The IAT related only to two specific behaviours in the present study. In the control group, those with more positive implicit attitudes towards younger, relative to older, workers spend less time speaking when interviewing the younger, relative to the older, target. Such a relationship is consistent with the compensatory effects discussed above. For the experimental group, those with more positive implicit attitudes towards younger, relative to older, workers, also made fewer speech errors when interviewing the younger, relative to the older, target. Although the relationship was in the expected direction, the lack of other relationships with implicit attitudes indicates that in the present study, attitudes, as measured by the IAT, were largely unrelated to both spontaneous and controlled type behaviours. Such lack of attitude-behaviour relationship will be addressed in the General Discussion.

The participants were also asked to provide feedback of the targets' interviewing behaviour. Although the feedback was collected mainly to maintain the cover story of the situation (i.e., that the participants were there to give feedback to the "applicants" on their interviewing skills), it was of interest if the ratings would be related to the participants' attitudes or to the ratings made by the targets of the participants' behaviour. In particular, as the participants' ratings of the target can be considered as controlled behaviour (e.g., Dovidio et al., 1997), it was expected that the participants' explicit attitudes would be related to their ratings of the targets. Unexpectedly, no significant differences in the participants' ratings as a function of condition or the targets' age were found.

Such a result suggests that the participants' rating behaviour was not influenced by the participants' attitudes as measured in the present study. The findings suggest that there were no differences between the participants' relatively controlled behaviour towards the older and younger targets. Indeed, both targets were given rather high evaluations (above 7 on a 9-point scale). It is possible that both the targets did indeed present themselves in such a favourable manner, that age was not used as a strong guiding piece of information. Past research has found that discrimination was evident only when judging average quality applications rather than when judging high quality applications (Dipboye, Arvey, & Terpstra, 1977; Landy & Sigall, 1974; Watkins & Johnston, 2000). Although care was taken to ensure that the answers for the interview questions were of average quality, it is possible that the preparedness of both the 'applicants' was impressive enough for the participants that the quality of the answers was not considered as strongly as expected in the participants' evaluations. The fact that the targets were able to produce a scenario for each of the behavioural questions

or an adequate response for the situational questions¹², could have been viewed by the relatively non-experienced participants as impressive in itself. A different outcome could of course be possible with a more experienced sample of participants who could have focused more on the quality of the answers rather than in the preparedness of the applicants.

Overall, the relationships between the participants' attitudes and behaviour showed mixed and relatively weak results. It is plausible that due to the lack of work experience of the participants, attitudes towards older workers were not strong or were not seen as relevant to the situation. Indeed, the attitude-behaviour relationship has been found to be stronger with personal experience with the target group (Fazio & Zanna, 1981). Although all participants had had some work experience and had worked with individuals above the age of 45, the experience was limited. When asked of the participants' experience with employment selection and recruitment practices in a practical level, the mean rating on a five-point scale (1 = no experience, 5 = very experienced) was only 1.55 (when asked of their theoretical knowledge, the average ratings was higher at 3.20). Therefore, the attitude domain in question may have been relatively unfamiliar to the participants with no great deal of thought devoted to the target group of older workers. Indeed, Glasman et al.'s (2006) recent meta-analysis on the relationship between attitudes and behaviour suggests that the amount of thought concerning the attitude object is positively related to attitude accessibility and subsequently should increase the relationship between attitudes and behaviour.

¹² Situational interview questions are those which require the applicant to describe their actions in a specified situation, e.g., "what would you do in scenario x", whereas a behavioural questions are those to which the applicant themselves will describe a situation from their previous experience. Both are used commonly in structured interview situations (Muchisky, 2006).

In sum, the present study's results provided further evidence for the existence of implicit bias towards older, relative to younger, workers. As with previous studies, no support was found for the malleability of implicit attitudes. In addition, the findings suggest that bias was also evident on the explicit measures of attitudes, and the mental imagery intervention influenced the explicit attitudes to a limited extent, such that the attitudes towards older workers became more positive for the experimental group participants as measured by the feeling thermometer scales. Mixed results were found for the attitude-behaviour relationship. The control group participants showed some evidence for the relationship between explicit attitudes and behaviour, but weak evidence was found for the implicit attitude-behaviour relationship. Some explanations were put forward for the generally weak attitude-behaviour relationships, such as the student sample used and the competent behaviour displayed by the targets.

General Discussion

Overview of studies

The present research investigated dual attitudes towards older workers. The aim of the research was to investigate both implicit and explicit attitudes, and their predictive utility in an employment-related context. In addition, attitude malleability and the role it may play in the attitude-behaviour relationship was also investigated.

The present research consisted of five studies, consisting of a pilot study and four (1, 2a, 2b and 3) main studies. A pilot study, which was conducted to establish which measure of attitudes was to be used in the main studies, resulted in a decision to use the Implicit Association Test (IAT; Greenwald et al., 1998). The four main studies investigated implicit attitudes, and the malleability of such attitudes towards older, relative to younger, workers. The malleability of attitudes was investigated with a use of a mental imagery intervention where the experimental group participants were asked to imagine and described respected and valued older workers in their surroundings. The control group participants were asked to imagine holiday destinations they would like to visit. In all studies, negative implicit bias against older workers was found and such bias was found to be relatively stable. Three studies also included explicit measures of attitudes. Although some variation was found between the studies and the measures used, overall positive attitudes towards older and younger workers were found. The responses on explicit measures were also found to be more influenced by the experimental manipulation than were the responses on the implicit measures of attitudes. In addition, the final study investigated the relationship between attitudes and behaviour. Specifically, relationships between implicit and

explicit attitudes and spontaneous and controlled type behaviours were examined. The study also allowed for investigation into the role that attitude malleability may play in the attitude-behaviour relationship. Overall, some evidence for youth-bias in the participants' behaviour was found, as well as evidence for the relationship between explicit attitudes and spontaneous behaviours. Such evidence was limited however. The implicit attitudes were largely found to be unrelated to behaviour. Implications for older workers will be discussed, as well as educational methods for reducing discrimination older workers face in employment.

Attitudes towards older workers

The present research provided strong evidence that negative implicit attitudes exist towards older workers (relative to younger workers). This finding was replicated in four studies, using various participant samples. Importantly, one of the samples consisted of Human Resources and Management professionals, demonstrating that those individuals involved in making important employment-related decisions also held implicit bias against older workers. Holding such attitudes may bear significant consequences for older workers and organisations, as will be discussed later. The present research is the first to show the existence of implicit bias in a context of older workers.

Overall, explicit attitudes were positive towards both older and younger workers. That is, in all the studies that examined explicit bias, ratings above the midpoint of the scale were given to both older and younger workers, and this was true in both of the explicit measures of attitudes (the semantic differential and the feeling thermometer)

and for both participant conditions. However, in Studies 2a and 3, some evidence of negative explicit bias was found towards older, relative to younger, workers. In both of these studies, the experimental group showed bias at time 1 on the feeling thermometer responses. In Study 2b, no evidence of bias was found, and further, in studies 2a and 3, no bias was evident at time 1 on the semantic differential scales. The bias in Studies 2a and 3 could have only been evident on the feeling thermometer scales as bias against older workers may be more affect driven. That is, the student participants may have felt more negatively about older workers, but could not necessarily differentiate older and younger workers on more specific items included in the semantic differential scales, possibly due to lack of experience with older workers. It is interesting that no bias in either measure was found in Study 2b. It is plausible that the Professionals (Study 2b) were more aware of the social norms and legislation on age discrimination and therefore showed no bias on the explicit measures. It is of course also possible that the Professionals were more knowledgeable on the lack of performance differences between older and younger workers, and were genuine in indicating no bias in their responses on the explicit measures.

The directions of the mean difference scores on the explicit measures of attitudes warrant a note. Of all the time 1 results (i.e., before the mental imagery manipulation was completed), nine out of the 12 means were in the predicted direction of bias against older, relative to younger, workers. Overall however, the mean differences were not large between younger and older workers. Two plausible explanations are put forward for this result. First, as mentioned above, it is possible that the relatively positive attitudes towards older workers are genuine. Research has found that

although negative attitudes have been associated with older workers, these workers are also seen as being reliable and having a strong work ethic (McGregor, 2006).

It is also possible however, that the participants were concerned about egalitarian social norms and therefore engaged in the process of impression management when responding on the explicit attitude measures. This explanation seems plausible as the participants were asked to evaluate attitudes towards both older and younger workers, making the comparative nature of the task salient. Although this can be considered as a strength in the present research as it mirrors the situation also outside the laboratory (as decisions in the workplace are often made between employees/applicants rather than on an individual basis), it is also possible that the nature of the task explains the somewhat different results gained in the present research to previous research.

Specifically, negative attitudes towards older workers have been reported in previous research, however, such studies have asked respondents to only express their attitudes towards older workers, rather than towards both older and younger workers (Loretto et al., 2000; McGregor & Gray, 2001, 2002; B. A. Richardson et al., 2007). Social desirability concerns are likely to be more salient when two categories are evaluated in the same occasion.

If the relative attitudinal similarity between younger and older workers in the explicit level is indeed genuine, it is suggested that educational efforts should be focused on addressing the discrepancy between implicit and explicit attitudes. Negative implicit attitudes have been found to have consequences on behaviour even when their explicit counterparts have been in disagreement with the content of such implicit attitudes. For example, Bessenoff and Sherman (2000) found that the participants' implicit attitudes

towards overweight individuals predicted behaviour whereas explicit attitudes did not. On the other hand, if positive attitudes towards older workers are simply a product of impression management, it may be beneficial to initially target educational efforts on addressing explicit attitudes to educate people on the true potential of older workers. For example, educating employers to concentrate on job related information, rather than ageist stereotypes, would be beneficial. As will be discussed later, some evidence between the participants' explicit attitudes and behaviour was found, providing some indication towards a genuine nature of such attitudes. Educational methods to improve the condition of older workers will be discussed in the section focusing on the implications of the present research.

The present research allowed for investigations into the relationship between implicit and explicit measures of attitudes. The studies that included both implicit and explicit measures generally showed dissociation between the measures. That is, the correlations between implicit and explicit attitudes were weak, with the implicit attitudes being more negative towards older, relative to younger, workers than were explicit attitudes.

Such weak relationships between implicit and explicit attitudes is consistent with previous research in the domain of older individuals in general (e.g., Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001), as in various other domains, such as with attitudes towards ethnic groups (Nosek et al., 2002a). The results of the present research provide further support for the assertion that implicit and explicit attitudes are distinct constructs (Greenwald & Nosek, 2008; Nosek, 2005). The dissociation implies that people may in fact hold different attitudes implicitly and explicitly, and

importantly, changing implicit and explicit attitudes are likely to involve different methods (Rudman et al., 2001). For example, if people are unaware of their negative implicit attitudes, educational methods raising awareness and providing tools to combat such biases may be devised, such as including implicit measures of attitudes as educational tools, as will be discussed later. However, the present research suggests that although the participants may have held more negative implicit than explicit attitudes, by and large, the implicit attitudes were not predictive of behaviour. In contrast, a relationship between the participants' explicit attitudes and behaviour (as rated by the targets) was found for the control group participants, suggesting that in the domain of older workers, changing people's explicit attitudes may be a beneficial way forward in combating age bias and discrimination in employment. Furthermore, the results of the present research showed that the explicit attitudes were more malleable than their implicit counterparts, further suggesting that explicit attitudes may be the optimal targets for educational efforts.

Attitude malleability

The present research investigated the possibility of influencing attitudes with a mental imagery intervention. Specifically, participants in the experimental group were asked to imagine and describe three valued and respected older workers from their surroundings. Participants in the control group were asked to imagine three holiday destinations they would like to visit. It was expected that making positive examples of older workers salient may influence the accessibility of positive associations in the attitude representation and therefore result in a change in attitudes as measured by the explicit and implicit measures. In relation to implicit measures of attitudes, the

findings suggest a relative stability of implicit attitudes. This was evident even when employing participant samples who would be more familiar with employment related issues and therefore more able to develop relevant examples of older workers. Such a lack of influence of the mental imagery intervention on implicit attitudes throughout the present research was unexpected.

As previous research on implicit attitude malleability has largely concentrated on domains of ethnicity and sex (with some notable exceptions, e.g., Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001; Kawakami et al., 2000), it is plausible that the differences between the present and other studies are related to the novel target group under investigation. Older workers as a category has only relatively recently been a category under research investigation and general public awareness, and for example, media exposure on older workers is less frequent than exposure to, for example, different ethnicities and sexes (i.e., usual target groups under investigation). Although such lack of exposure may result in less stereotyping of the target group, it can also lead to general negative affect towards older workers, simply generalised from the documented negative affect towards older individuals in general (Butler, 1970; Martens, Goldberg, & Greenberg, 2005).

In relation to the lack of exposure to older workers, it can be speculated that thinking about positive examples of older workers was a relatively difficult task for the participants. That is, the availability of positive examples of older workers may be much more limited than, say, thinking about positive examples of females or African Americans. The media, for example, provides numerous positive examples of females and African Americans, whereas older individuals have been shown to be

underrepresented in prime-time television (Bazzini, McIntosh, Smith, Cook, & Harris, 1997; Kessler, Rakoczy, & Staudinger, 2004; Signorielli, 2004; Vernon, Williams, Phillips, & Wilson, 1990). Indeed, a closer examination of the descriptions provided by the participants showed that although all participants had provided three examples, many had written short descriptions, sometimes including only a few words (e.g., “hard worker, creative, produced some great manuals”), providing some evidence of the difficulty of the task.

In addition, it can be speculated that by thinking and describing merely three positive examples of older workers was not sufficient to generalise the positive evaluations of the entire target group of older workers on the implicit level. Specifically, it is possible that the brief (approximately 5 minutes) exposure to counter-stereotypical members of the target group is required to change implicit attitudes. Dasgupta and Greenwald (2001), for example, presented their participants in the pro-old condition with numerous examples of admired older individuals and disliked younger individuals and required the participants to read the descriptions of the individuals and make a decision whether the description was indeed accurate of the target individual. Similarly, Karpinski and Hilton (2001) presented their participants with 200 word pairs coupling the target group ‘elderly’ with positive words. Both of these interventions are relatively extensive in terms of length of time and the number of examples or trials presented as compared with the present intervention. It is plausible that a longer lasting intervention with more exemplars may be needed for altering implicit associations of older workers. Future research should examine whether the impact on implicit attitudes would be found were a more extensive, longer-lasting manipulation was used.

Overall then, implicit attitudes were found to be relatively resistant to the experimental manipulation used in the present study. The results are consistent with the traditional view of attitudes that construes implicit attitudes as relatively stable (Banaji, 2001; Eagly & Chaiken, 1993; T. D. Wilson et al., 2000). As implicit attitudes have the potential to influence behaviour, at least in some attitude domains, it is recommended that future research should focus on investigations as to how to best change implicit bias. As much research has demonstrated the malleability of implicit attitudes (Blair, 2002, for review), future research should particularly focus on investigating manipulations that may result in more permanent changes.

Explicit attitudes, in contrast, have often been found to be influenced by contextual information (Bassili & Brown, 2005; Schuman & Presser, 1981). In two of the present studies (2a and 3), explicit attitudes were influenced by the mental imagery exercise, although this was not consistent in both the semantic differential and the feeling thermometer scales. In Study 2a, the experimental group participants showed malleability in both of the explicit measures, whereas in Study 3, this was evident only in the responses on the feeling thermometer scales. Why such differences were observed between the explicit measures of attitudes is interesting. It is possible that the mental imagery intervention influenced the general affective feelings towards older workers, whereas the more specific items on the semantic differential scales were unaffected. It is also curious that both participant groups showed a significant reduction in explicit bias as measured by the semantic differential measure in Study 3. The time 2 means were in the predicted direction however, in that the experimental group participants showed more positive attitudes towards older, relative to younger,

workers whereas the control group participant showed more positive attitudes towards younger, relative to older, workers. The results of Studies 2a and 3 are consistent with other research showing relative instability of explicit attitudes (Bassili & Brown, 2005; Schuman & Presser, 1981). In general however, the change in the explicit attitudes as a function of the mental imagery intervention did not increase the dissociation of implicit and explicit attitudes. That is, some evidence for an increased dissociation was found in Study 2a where the correlation between time 2 IAT and feeling thermometer responses became weaker as compared with time 1, otherwise the correlations became less discrepant or remained relatively similar. Such a lack of change is not surprising as the change in the explicit measures of attitudes was not drastic and even at time 1, the evaluations of older workers were still positive (i.e., above the midpoint of the scale).

Interestingly, some differences were observed between the studies using a student and a Professional sample. Specifically, no malleability of explicit attitudes was found for the study involving Professionals (Study 2b). It is plausible that the Professionals were less influenced by the mental imagery intervention as their time 1 responses were based on stronger attitudes as compared with the responses given by the students. That is, as the Professionals had had more experience in employment-related contexts, it is likely that they would have held stronger attitudes towards older workers.

Although the data does not allow for insight into the processes involved in the attitude malleability as assessed by the explicit measures, it is possible that the experimental group participants in Studies 2a and 3 genuinely changed their attitudes towards older

workers as more positive examples of the target category were brought to mind. It is of course also possible that the change observed in the explicit measures was simply a consequence of social desirability, such that the participant felt as if they should give more positive responses due to the completed exercise. Genuine change in attitudes would naturally be the desired effect as research has suggested that people are likely to initially demonstrate egalitarian attitudes in the explicit level before in the implicit level (Monteith, 1993), as will be discussed.

In sum, the results in the present research suggest that implicit attitudes towards older workers are relatively difficult to manipulate, whereas explicit attitudes are more easily influenced by experimental manipulations. It is therefore suggested that it is important to consider both implicit and explicit attitudes in the context of older workers as interventions aimed at reducing bias may indeed be effective at doing so with explicit but not necessarily with implicit attitudes. Without also including implicit measures, the intervention used in the present research may have been concluded as generally effective at changing attitudes. Importantly, past research has also found that even when implicit and explicit attitudes are in conflict, both attitudes have behavioural consequences (Greenwald et al., in press; Poehlman et al., 2004).

Study 2a included a measure of the participants' internal and external motivations to respond without bias. Such a measure was included as previous research had found that individuals' motivations influence people's implicit and explicit attitudes. No influence of motivation was found in the present research. Although unexpected, the impact of motivation has not been found consistently in research (Lowery et al., 2001). The lack of influence of motivation in the present research can be attributed to

relatively high levels of internal and low levels of external motivation, with little variability between the participants. The low variability in the participants' responses may have resulted from the participant sample's likely homogeneity in their liberal attitudes. Further, the participants' motivations relevant to the task at hand (i.e., attitude responses) may not have been assessed with the questionnaire. As previously discussed, older workers as a category, is likely be quite novel and therefore the participants may have had difficulty with relating motivations to respond in a bias free manner to older workers specifically. It is also possible that such motivation measures are more useful in domains such as racism, where motivation may play a larger role in determining people's attitudes due to the strong social norms surrounding the attitude domain.

Attitude-behaviour relationship

As discussed in the Introduction section, the interest towards attitudes in social psychology has been driven largely by their expected relationship with behaviour. Attitude-behaviour relationship was also of interest in the present research. Both spontaneous and more controlled types of behaviours towards an older and a younger target were investigated as previous research has indicated that explicit measures of attitudes may be more predictive of controlled behaviours and implicit measures of attitudes may be more predictive of spontaneous behaviours (Dovidio et al., 2002; Dovidio et al., 1997; T. D. Wilson et al., 2000). In the present study, participants took part in a pre-employment interview exercise where each participant interviewed an older and a younger applicant ("targets"; actually confederates). Implicit and explicit measures of attitudes towards older and (or relative) to younger workers were

measured prior to the exercise. The mental imagery exercise was included to investigate the role that attitude malleability may play in the attitude-behaviour relationship. The focus here was particularly on explicit attitudes, as they had been shown to be influenced by the mental imagery intervention in Study 2a.

Overall, there was some evidence for more positive spontaneous behaviours towards the younger, relative to the older, target. This was consistent with the positive attitudes towards younger, relative to older, workers found in the implicit measure of attitudes, as well as with the largely positive attitudes found in absolute terms in the explicit measures of attitudes. Specifically, it was found that the participants smiled more at the younger, relevant to the older, target. In addition, the younger target gave higher ratings to the participant when the older target had been interviewed first. No such effect of interview order was found when the younger target was interviewed first. The effect of the interview order warrants consideration. The interview order in itself cannot explain the findings as when the younger target was interviewed first, the older target did not evaluate the participant more positively than did the younger target. It can be speculated that following the interview with the older target, the participants behaved in a more positive manner due to the contrast the participants may have perceived between the younger and the older target. However, interviewing the younger target first may not have resulted in such a contrast effect, as the older target may not have been perceived more positively following the interaction with the younger target. The results provide some evidence of the youth-bias that has been found in other research investigating discriminatory practices towards older workers (M. Wilson & Kan, 2006).

The relationship between attitudes and behaviour was complex. Overall only weak support was found for such a relationship, both with implicit and explicit measures of attitudes and with spontaneous and controlled behaviours. For the control group participants, an unexpected relationship was found between the judges' ratings and the participants' semantic differential responses - more positive attitudes towards younger, relative to older, workers were related to less positive behaviour towards the younger, relative to the older, target. Such an unexpected relationship was also found between the IAT responses and the participant's speaking time. In contrast to the judges' ratings, the targets' ratings of the control group participants' behaviour showed an expected relationship. Specifically, the more positive the attitude responses on the semantic differential scales towards younger, relative to older, workers, the more positive were the ratings given by the younger, relative to the older, target. As considered in Study 3 discussion, it is possible that participants who responded less favourably towards older workers in the semantic differential scales wished to compensate such ratings by showing more positive behaviour towards the older target, resulting in the unexpected relationship with the judges' ratings. Such compensatory effect has also been found in previous research (Blascovich et al., 2001; Yabar et al., 2006). With the targets' ratings, showing the opposite pattern, it is plausible that such compensatory effects were only convincing to the judges' observations but not to the targets. As considered in Study 3 discussion, differential relationships between the two rating sources evaluations and the participants' attitudes is not necessarily surprising as targets were likely to have more invested in the interaction than the judges and therefore the targets may have been more perceptive of the participants' behaviour. It can also be argued that the interaction partner's perception is more important than those of observers as, for example, an older job applicant perceiving an

interviewer's behaviour negatively can influence the performance of the older applicant, whereas an observer's perception of the interview situation is unlikely to bear significant consequences.

McConnell and Leibold's (2001) research shares many similarities with the design of the present study. Similar to the present research, McConnell and Leibold found that the participants' explicit attitudes were related to the confederates' ratings. However, the judges' ratings were not related to the explicit attitudes. Although a negative relationship was found with the judges' ratings in the present study, the lack of expected relationship between the explicit measures and the judges' ratings is consistent between the present study and that of McConnell and Leibold's.

The experimental group participants' attitudes were largely unrelated to both controlled and spontaneous behaviours. That less evidence for the attitude-behaviour relationship was found for the experimental group participants is intriguing. As considered in Study 3 discussion, it is possible that the mental imagery exercise dissociated the experimental group participants' attitudes from behaviour, such that the exercise may have increased salience of social norms for equity for the participants, resulting in comparable behaviour towards the younger and the older target.

Interestingly, a differential relationship was found for the experimental and control conditions between the participants' responses on the IAT and the judges' ratings of the participants' behaviour. Specifically, the relationship between the ratings of the participants' behaviour and their responses on the IAT was in the expected direction

for the experimental group (i.e., those with more positive attitudes towards younger, relative to older, were rated as showing more positive behaviour towards younger, relative to the older, target), whereas the relationship was in the opposite direction for the control group participants. As discussed above, efforts to compensate lower ratings given towards older workers with more positive behaviour towards the older target may explain such an unexpected relationship. Although the mental imagery exercise may have increased the social norms of equity for the experimental group, the influence may not have affected the implicit attitudes. It should be noted however that neither correlation (i.e., between the IAT and the judges' ratings of the control or experimental group participants' behaviour) reached significance and were of medium effect size only.

It was expected that the participants' implicit attitudes would be related to primarily their spontaneous behaviours. However, only weak evidence for such relationships was found. The IAT was not related to either of the targets' or judges' ratings on the composite level (i.e., of spontaneous behaviours) and only two relationships were found with specific quantitative ratings. In the control group, those with more positive implicit attitudes towards younger, relative to older, workers spoke less when interviewing the younger, relative to the older, target. Such a relationship is consistent with the compensatory effect discussed previously. For the experimental group, those with more positive implicit attitudes towards younger, relative to older, workers, also made less speech errors when interviewing the younger, relative to the older, target, as can be expected.

Such a lack of implicit attitude-behaviour relationships warrants consideration. The issue of measurement compatibility may contribute to the unexpected results. The principle of compatibility between attitude and behavioural measures has been previously suggested to influence the correlations between attitudes and behaviour (Ajzen & Fishbein, 1977; Greenwald et al., in press). That is, the measures of attitudes and behaviour are considered to be more compatible when the measures involved the same target, action and context. For example, it has been suggested that lower correlations between general implicit attitudes and non-verbal measures can be expected due to the relatively narrow behavioural criteria used in measuring behaviour (Ajzen & Fishbein, 2005). Recent meta-analytic research also supports that conceptual correspondence between measures of attitudes and behaviour is important (Hofmann et al., 2005). In the present study however, attitudes were measured at a general level whereas many of the behavioural measures were specific (e.g., eye contact and smiling). Similarly, McConnell and Leibold (2001) investigated the relationship between general measures of attitudes (the IAT, semantic differential scales and feeling thermometer scales) and specific behavioural items (e.g., eye contact, speaking time, etc). McConnell and Leibold (2001) found no evidence of the explicit attitude measures' relationship with specific behaviours, and out of 13 specific behaviours rated, the implicit measure of attitudes was only related to five specific social behaviours. It is recommended that future research should include attitude and behavioural measures that would be better matched when investigating the attitude-behaviour relationship.

It is also important to note that the attitude domain in question has not been previously examined and it is indeed possible that explicit attitudes are more predictive of

behaviour in the context of older workers. Future research is urged to establish the value of implicit measurement in the context of older workers.

Overall, the final study found relatively weak evidence for the relationship between implicit and explicit attitudes and spontaneous and controlled behaviours. Although previous research has found evidence for the relationship between attitudes and behaviour, it is well established that the relationship is complex and various factors govern whether a relationship is found (Glasman & Albarracin, 2006, for a recent meta-analysis). A recent meta-analysis by Glasman and Albarracin (2006), for example, showed that attitudes were more predictive of behaviour if the respondent has had direct experience with the attitude object and if individuals had frequently reported on their attitudes towards the object. Specific to the present study, the participant sample used may have contributed to the weak attitude-behaviour relationships found.

Although the study using a Professional sample (Study 2b) suggests that attitudes towards older workers are similar across student and Professional samples, past research has suggested that attitude-behaviour consistency is stronger if the perceiver has had experience with the attitude object (Fazio & Zanna, 1981). In addition, a recent meta-analysis on the attitude-behaviour relationship (Glasman & Albarracin, 2006) suggests that lack of personal relevance and lack of confidence in the attitude towards an attitude object results in a weaker relationship between attitudes and behaviour. It can be speculated that both attitude confidence and relevance could have been relatively low for the student participants.

The student participants also gave evaluations of the targets. Although these evaluations were completed in the main to maintain the cover story of the interview exercise (i.e., that the participants were there to give feedback to the “applicants”), it was of interest whether such controlled behaviour would be related to the targets’ ratings of the participant. The targets’ and participants’ ratings in either participant condition were not related to one another. As considered in Study 3 discussion, it is possible that both the targets did indeed present themselves in such a favourable manner, that age was not used as a strong guiding piece of information.

Past research has found that discrimination is evident only when judging average or poor quality applications rather than high quality applications (Dipboye, Arvey, & Terpstra, 1977; Landy & Sigall, 1974; Watkins & Johnston, 2000). Previous research has however only investigated more controlled behaviours (e.g., evaluating a quality of a job application; Watkins & Johnston, 2000) whereas the present research included both controlled and spontaneous type behaviours. The participants’ evaluations of the target can be considered as controlled behaviour and such behaviours showed no difference between the younger and the older target. However, the participants’ spontaneous behaviours did show some differences, as described above. Future research should therefore investigate whether discrimination based on non-job related characteristics (such as age) may be evident in spontaneous type behaviours, even when the competence of the job applicant is high. Although care was taken to ensure that the answers for the interview questions were of average quality, it is possible that the preparedness of both the ‘applicants’ was perceived as impressive and therefore the quality of the answers was not considered as strongly as was expected. That is, the fact that the targets were able to produce a scenario for each of

the behavioural questions or a reasonable response for the situational questions, could have been viewed by the relatively inexperienced participants as impressive. A different outcome could of course be possible with a more experienced sample of participant who could have focused more on the quality of the answers rather than in the preparedness of the applicants. Using more experienced interviewers would better mirror the conditions outside of the laboratory.

The final study also investigated whether differences in the attitude-behaviour relationship would be observed as a function of the mental imagery intervention. Minimal support was found for this, although the control group's explicit attitudes, as measured by the semantic differential scales, were related to the targets' evaluations of their behaviour – this was not the case for the experimental group participants. It is therefore plausible, as discussed above, that the experimental intervention caused dissociation between attitudes and behaviour for the experimental group participants. That is, the experimental intervention may have alerted the participants to the social norms of equality, resulting in the participants' effort to act in a social desirable manner. Whereas the control group participants showed some indication of explicit attitude-behaviour relationship, that attitudes and behaviour were largely unrelated for the experimental group supports the speculation on dissociation. The only correlation (of large effect size) that was found for the experimental group participants was between the participants' implicit attitudes and the number of speech errors the participant made, such that more positive attitudes towards younger, relative to older, workers, the less speech errors were made when interviewing the younger, relative to the older, target. Indeed, such an implicit-paralinguistic behaviour relationship would have been difficult to conceal. However, as the control group participants did not

show much evidence for the attitude-behaviour relationship either, the possibility of dissociation of attitudes and behaviour for the experimental group remains speculative.

The present research therefore sheds limited light onto the debate on whether attitude malleability is trivial, as may be suggested by the constructionist view of attitudes (Schwarz & Bohner, 2001) or whether more attention should be paid to the potential consequences of such malleability. The intervention used in the present research could have been relatively inconsequential for the implicit measures due to the issues already discussed, such as the difficulty in developing three relevant examples. As research on other target groups have found implicit attitude malleability, the relationship with attitude malleability and behaviour warrants future research. The question of whether the malleability effects reflect a change in the attitude representation or simply a temporary increase in the accessibility of positive associations seen in responses on measurement tools is an important one. If the change is simply a matter of responses on the measurement tools, the utility of manipulating implicit attitudes with the interventions currently used is questionable. However, if a change is also observed in behaviour, more confidence can be asserted that the attitude construct is being influenced by such manipulations, although the longevity of the effect is yet another area of future research. Additional research should also investigate the differences between the types of manipulations used, for example, the role that awareness of the manipulation may play in the strength of the malleability. Whether or not the respondent has awareness of the attitude domain under investigation or of the strategy that has been implemented, may be an influential factor on whether a change in subsequent behaviour can be observed. Such

research is likely to offer guidance as to how to most effectively change negative implicit attitudes.

Implications of the present research

The present research provides strong support for the assertion that negative implicit attitudes towards older workers exist. Importantly, implicit bias was found with both student and Professional samples. Although the present research found weak evidence for the relationship between attitudes and behaviour, the importance of implicit attitudes should not be discounted on the basis of one study only. As previous research has demonstrated the relationship between implicit attitudes and behaviour and the present research found strong evidence for implicit bias towards older workers, future research should further investigate the relationship between attitudes and behaviour in this attitude domain, as people's implicit bias may be a contributing factor for the barriers older individuals face in employment. It is recommended that the attitudinal and behavioural measures would be better matched to reduce the potential problem of measurement incompatibility, a potential concern in the present research.

As discussed previously, it is possible that the overall positive explicit attitudes found in the present research and the changes as a function of the experimental intervention were genuine, rather than a function of impression management. Importantly, it has been suggested that as attitude change may begin with explicit attitudes. Monteith's (1993) research, for example, suggests that the first step for changing implicit attitudes is to raise awareness of the potential discrepancy between perceiver's

egalitarian self-image and their negative implicit attitudes (also Devine, 1989). Such discrepancy between implicit and explicit attitudes was largely found in the present research's studies. It has been suggested that raising awareness of such discrepancy will enable individuals to increase commitment to maintain egalitarian standards and internalising such standards, resulting in potential stereotype inhibition (Monteith, 1993). Importantly, recent research suggests that such inhibition may also occur with implicit attitudes, as internalising egalitarian values may influence more automatic processes (Devine et al., 2002). Raising awareness of biases was also proposed by Greenwald and Banaji (1995), who suggested that 'consciousness raising' is likely to be a useful strategy for avoiding discrimination as the perpetrator may not be aware of their negative implicit attitudes. It is therefore suggested that organisations should become more proactive in their training for increasing awareness of the potential of older workers. Diversity training, usually taking a form of workshops where diversity related issues are discussed, is practiced in many organisations, particularly in the US (De Meuse, Hostager, & O'Neill, 2007). Such diversity training could also include implicit measures of attitudes as awareness raising tools as will be discussed later.

As stated previously however, it is also possible that the relatively positive explicit attitudes and the changes as a function of the experimental intervention were a result of the social norms of equality. In this case education and raising awareness on the potential of older workers should be focused on. Indeed, the Equal Employment Opportunities (EEO) Trust (2006) in New Zealand recently suggested that lack of information and knowledge (e.g., by employers) is at least partly responsible for the persistence of discriminatory behaviours towards older individuals. The EEO Trust is already involved in educating employers on the capabilities of older workers,

although to the author's knowledge, research is yet to establish the effectiveness of such work. Evaluation of such initiatives is an important area for future research. In addition, policies on older workers should be developed, and where they exist, made more evident to employees. In fact, Chiu, Chan, Snape and Redman (2001) found that particularly one organisational factor, the existence of an ageism policy, was influential towards stereotypes on older workers. Specifically, when an age discrimination policy was available, more positive attitudes were associated with older workers. Unfortunately, Taylor and Walker's (1998) research suggests that organisations are slow to take steps to combat age discrimination (also McPherson, 2006). One simple way to increase interest towards issues on older workers is by publishing academic research in more practitioner focused publications.

Not only is such education important for employers and other decision-makers in organisations, but the attitudes of co-workers should also be considered. The students used as participants in the present research are likely to become colleagues to older workers. Attitudes of co-workers are important, as the way in which people behave (including spontaneous behaviours) may have consequences on older workers' behaviour, as discussed in the Introduction section.

Although implicit attitudes were largely unrelated to the behaviours measured in the present research, the potential importance of such attitudes can not be overlooked simply based on one study. That is, the present research does not suggest that implicit attitudes should be ignored. Alarming, it was found that negative implicit attitudes are not only evident in a student population but also with Professionals, responsible for the recruitment and selection of employees. By definition, people are unlikely to

be aware of such biases and without such awareness, change is not achievable (e.g., Rudman & Lee, 2002; D. T. Wegener & Petty, 1995). As stated by Greenwald and Banaji (1995), "...when a decision maker is aware of the source and nature of a bias in judgment, that bias may effectively be anticipated and avoided" (p. 19). It is therefore suggested that in addition to educating employers of the potential of older workers, measures of implicit attitudes, such as the IAT, can be used as a powerful educational tool. Implicit attitudes measures can be used as a starting point for discussion on biases in organisations, and in particular, may be useful as people are likely to see themselves as fair and therefore not willing to face the issue of bias. Using the IAT provides evidence of the existence of implicit bias, and it is therefore less likely to be ignored than, for example, discussions on stereotyping (Bombardieri, 2005). Simply alerting people to biases may not be adequate however. Ragan and Bowen (2001), for example, found that although simply sharing corrective information about elderly people was effective initially, only those who received reinforcement on their knowledge showed a lasting effect in a one-month follow-up. The study highlights the importance of continuing education rather than a one-off training session. Educating employers on the possibility of implicit biases could therefore involve implicit measures to highlight biases and exercises to focus on job-related competencies and to use strict job-related criteria for decision making. Employers should take part in such training on a regular basis.

Limitations and future research

Some limitations can be identified in the present research.

Although the present research used Professionals in Study 2b, it is possible that using Professionals also in the final study could have resulted in different findings, where the relationship between attitudes and behaviour was investigated. Professionals may have stronger attitudes towards older workers and therefore such attitudes may be more accessible in situations, such as in employment interview contexts. Future research should therefore consider investigating the attitude-behaviour consistency with more experienced individuals. It is acknowledged that access to such individuals can be difficult due to the time commitment involved with participation. In addition, gaining organisations' support to collect data is likely to be difficult due to the sensitive nature of the information to be collected (i.e., potentially revealing biased attitudes). Such barriers could potentially be overcome by ensuring organisations of the confidentiality and anonymity of the data, and the potential business benefits the organisation may gain by improving the quality of their decision making by addressing such biases.

It is also acknowledged that the sample sizes in the present studies were small.

Particularly Study 2b and the final study could have benefited from increased number of participants and therefore increased power for detecting statistically significant effects. As an illustration, a post-hoc power calculation for the .60 correlation found in the final study between the time 1 and 2 semantic differential responses for the control group resulted in power of .46. To reach significance, a sample size of 27 would have been required - the actual sample for the condition was 15. Although

various constraints, such as access to more Professionals, prevented further recruitment to these studies in the present case, it is acknowledged that, particularly the final study's results need to be interpreted with caution due to the lack of power.

The present research focused on attitude measurement. As stated in the Introduction section, it is unclear what exactly implicit measures of attitudes assess (D. M. Amodio & Devine, 2006; Devine, 2001; Eagly & Chaiken, 2005; Fazio & Olson, 2003a). Given the large increase of implicit measures of attitudes used in research, future research is urged in this area. Whether implicit measures simply avoid impression management tactics or whether the content of implicit and explicit attitudes vary is an important question to investigate, as attitude change efforts are likely to differ depending on the results of such research. If impression management is the main cause of the implicit-explicit attitude dissociation, then educational efforts should be largely focused on the explicit level. However, as much research suggests that the content of implicit and explicit evaluations differ, educational efforts need also to address changing implicit attitudes, which is likely to be a challenging task.

The role that implicit biases towards older individuals may play in employment-related settings requires further research. The present research included one study investigating the attitude-behaviour relationship and in only one context. Limitations, such as the sample size and the student sample used, should be addressed in future research. Given the importance of the topic in the context of the ageing population, biases may not only be detrimental to older workers but also for organisations that are likely to make less optimal decisions when job unrelated information is used as decision making criteria (Davey, 2008).

The influence that implicit bias may play for the older workers themselves also warrants research. Alarming, research has shown that implicit ageism is likely to persist throughout one's lifetime (Levy & Banaji, 2002). Levy (Levy, 2001; Levy & Banaji, 2002) has discussed the implications of implicit ageism within older individuals themselves. For example, subliminally activating elderly stereotypes was found to hinder older people's performance on a memory test (Levy, 1996). The present research in combination with that of Levy's would suggest that implicit bias is not only important to be addressed with employers but also within older individuals themselves. Having negative implicit attitudes towards oneself has the potential to hinder performance in, for example, job interviews or in applications and motivation for training and development opportunities. Organisations can therefore not only ensure that older workers are treated as equal with younger employees (consistent with New Zealand's Human Rights Act, 1993) but also offer some forms of positive action, such as training targeted specifically for older workers.

The impact of awareness raising strategies to improve the situation for older workers should be investigated. Organisations have been found to be ill-prepared for the ageing workforce, illustrated by, for example, the lack of policies implemented relating to older workers (Davey, 2008). The ageing population and ageing workforce cannot be ignored. As older workers are likely to possess much organisational knowledge (Davey & Davies, 2006), key to a competitive edge in the current knowledge age, more pro-active management for selecting and retaining older employees is urgently needed. Flexible working options, for example, have been highlighted as one initiative which may enhance retention of older workers (Chartered Management Institute, 2005). Not only is recruiting and retaining older workers

beneficial for organisations, the cost related to retirement income support is expected to dramatically increase in the recent future, and therefore it is also vital to retain older individuals in the workplace for economic and social benefits (Davey & Davies, 2006). However, as Davey and Davies (2006) point out, ageist attitudes may be responsible for negative feelings older individuals have towards staying in the workforce. It is strongly encouraged therefore that future research should address how to best dispel the myths on older workers.

Concluding comments

The present research investigated attitudes towards older workers, focusing specifically on the application of the dual attitude framework in this domain. The predictive utility of both implicit and explicit attitudes was investigated, and further, the role that attitude malleability may play in such a relationship was examined. The research showed clearly that negative implicit attitudes towards older, relative to younger, workers exist. In contrast, explicit attitudes towards both older and younger workers were generally positive. Explicit attitudes were found to be more influenced by the mental imagery intervention, as compared to implicit attitudes, which showed relative stability throughout this research. No strong evidence was found for the relationship between attitudes and behaviour or the influence of the mental imagery intervention on the relationship.

The present research highlights the importance of investigating both implicit and explicit attitudes, particularly as negative implicit attitudes were also found with a sample of Professionals, responsible for important decisions affecting older

individuals. As explicit attitudes were found to be more influenced by the experimental intervention, it is recommended that training interventions should initially be targeted at people's explicit attitudes, while using implicit attitude measures as awareness raising tools.

Due to the great demographic changes occurring internationally, including New Zealand, organisations should be more prepared for the ageing workforce, including educating employees and decision makers on the potential negative consequences of negative attitudes – attitudes which may exist both with and without the perceivers' awareness. Although it has been long recognised in psychology that human functioning consists of both conscious and unconscious processes (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001), application of such dual process framework has largely been ignored in organisational research. The present research suggests that negative attitudes towards older workers exist in the implicit level and should therefore be addressed. As Rudman (2004b) recently stated that “as a first step, we need to inform people about this picture of social reality. Because awareness of a problem is the first step to eliminating it (Wilson & Brekke, 1994), education is key” (p. 128).

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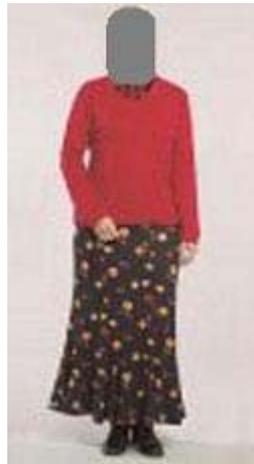
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Appendices

Appendix A: Photograph stimuli for the affective measures





Appendix B: A pilot questionnaire, free-response task.

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“Characteristics associated with people of different shapes”

You are invited to participate in the above named study. The study investigates the characteristics that are associated with people of different shapes.

The purpose of the study is to gain understanding as to which characteristics are commonly associated with different body shapes. This study will take approximately five minutes, and we simply ask you to write down as many personality characteristics and adjectives commonly related to people of different body shapes.

There are no correct answers to these questions; we are simply interested in your opinions. You are free to withdraw from the study at any time, and withhold any information you have provided.

The results of the study may be published, but you are assured of the confidentiality and anonymity of study. To ensure this, you are asked **not** to provide your name or any contact details.

By completing this questionnaire, however, it is understood that you are consenting to participate in this study and that you consent that the results of this study may be published while anonymity is preserved.

The study is conducted by Sanna Malinen, under the supervision of Assoc Prof Johnston and Dr Neumann. Assoc Prof Johnston and Dr Neumann can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch. Sanna can be contacted on skm37@student.canterbury.ac.nz, or on 366 7001, extension 7187. She is happy to discuss any concerns you may have about this study.

The study has been reviewed and **approved** by the University of Canterbury Human Ethics Committee.

“Characteristics associated with people of different shapes”

Please take a few minutes to write down, in the blank space below as many one-word personality traits and adjectives that you know of, commonly associated with the body shapes specified below.

Please note that you are required to make generalisations – we understand that not all people of these body shapes have these characteristics.

There are no correct answers to these characteristics, as we are simply interested in your opinions. Please answer honestly. Once again we remind you that all the information is anonymous and confidential.

Please write down as many one-word personality traits and adjectives that you know of, commonly associated with -

Average-size people

Please write down as many one-word personality traits and adjectives that you know of, commonly associated with -

Thin people

Please write down as many one-word personality traits and adjectives that you know of, commonly associated with -

Obese people

Debriefing sheet

Thank you for taking part in the “Characteristics associated with people of different shapes” questionnaire. The aim of this pilot questionnaire is to gain understanding as to which characteristics are commonly associated with different body shapes. Past research has shown that people associate different qualities depending on people’s body shape. For example, endomorphs (people of round shape) are often associated with being humorous and happy; mesomorphs (muscular shape) as athletic; and ectomorphs (thin and delicate shape) as intelligent and quiet. A number of reasons can be offered to explain why these stereotypes (beliefs about groups) are associated with different body types, for example, the influence of media and your own experiences with people of different body shapes. Whatever the reason, it is an important area for research. One reason for this research is to investigate if these stereotypes lead to differential treatment of people depending on their body shape. For example, it has been shown that obese people can be discriminated against because of their weight. The results of this questionnaire are used to select the stereotypes to be investigated for future studies, which aim to reduce such discrimination and disadvantage.

It is important to note that everybody holds and uses stereotypes, some of them being more positive than others. Using such stereotypes does not necessarily lead to negative consequences, people use positive stereotypes everyday. For instance, associating intelligence with ectomorphs and happiness with endomorphs is perceived as positive by most.

All information collected will remain anonymous and confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix C: Rating scale questionnaire for stimuli for the cognition-based measures.

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“Characteristics of people of different shapes”

You are invited to participate in the above named study. The study investigates the characteristics that are commonly associated with people of different shapes.

You will be asked to rate different characteristics on a rating scale, taking about 5 minutes in total. There are no correct answers to these questions; we are simply interested in your opinions. You are free to withdraw from the study at any time, and withhold any information you have provided.

The results of the study may be published, but you are assured of the confidentiality and anonymity of study. To ensure this, you are asked **not** to provide your name or any contact details.

By completing this questionnaire, however, it is understood that you are consenting to participate in this study and that you consent that the results of this study may be published while anonymity is preserved.

The study is conducted by Sanna Malinen, under the supervision of Assoc Prof Johnston and Dr Neumann. Assoc Prof Johnston and Dr Neumann can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch. Sanna can be contacted on skm37@student.canterbury.ac.nz, or on 366 7001, extension 7187. She is happy to discuss any concerns you may have about this study.

The study has been reviewed and **approved** by the University of Canterbury Human Ethics Committee.

“Characteristics of people of different shapes”

Please indicate (√) on the rating scale below how well in general each characteristic describes people of different shapes; average size, thin and obese. The rating scale ranges from 1 = not at all characteristic, and 5 = strongly characteristic. There is no correct answer to these ratings, as we are simply interested in your opinions. Please answer honestly and do not spend too long on each question. Once again we remind you that all the information is anonymous and confidential.

How characteristic are the below words of an average-size person:

1 = Not at all characteristic 5 = Strongly characteristic

Normal	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Active	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Unconfident	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Caring	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Artistic	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Easygoing	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Vain	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Clean	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Weak	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Loud	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Violent	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Rude	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Selfish	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

1 = Not at all characteristic 5 = Strongly characteristic

Lazy 1 2 3 4 5 **Violent** 1 2 3 4 5 **Organised** 1 2 3 4 5 **Disgusting** 1 2 3 4 5 **Economical** 1 2 3 4 5 **Anxious** 1 2 3 4 5 **Dirty** 1 2 3 4 5 **Happy** 1 2 3 4 5 **Musical** 1 2 3 4 5 **Ugly** 1 2 3 4 5 **Boring** 1 2 3 4 5 **Insecure** 1 2 3 4 5 **Jolly** 1 2 3 4 5 **Greedy** 1 2 3 4 5 **Fit** 1 2 3 4 5 **Petite** 1 2 3 4 5 **Balanced** 1 2 3 4 5 **Unorganised** 1 2 3 4 5 **Beautiful** 1 2 3 4 5 **Tidy** 1 2 3 4 5

How characteristic are the below words of a thin person:

1 = Not at all characteristic 5 = Strongly characteristic

Normal 1 2 3 4 5

Active 1 2 3 4 5

Unconfident 1 2 3 4 5

Caring 1 2 3 4 5

Artistic 1 2 3 4 5

Easygoing 1 2 3 4 5

Vain 1 2 3 4 5

Clean 1 2 3 4 5

Weak 1 2 3 4 5

Loud 1 2 3 4 5

Violent 1 2 3 4 5

Rude 1 2 3 4 5

Selfish 1 2 3 4 5

Lazy 1 2 3 4 5

Violent 1 2 3 4 5

Organised 1 2 3 4 5

Disgusting 1 2 3 4 5

Economical 1 2 3 4 5

Anxious 1 2 3 4 5

Dirty 1 2 3 4 5

1 = Not at all characteristic 5 = Strongly characteristic

Happy 1 2 3 4 5 **Musical** 1 2 3 4 5 **Ugly** 1 2 3 4 5 **Boring** 1 2 3 4 5 **Insecure** 1 2 3 4 5 **Jolly** 1 2 3 4 5 **Greedy** 1 2 3 4 5 **Fit** 1 2 3 4 5 **Petite** 1 2 3 4 5 **Balanced** 1 2 3 4 5 **Unorganised** 1 2 3 4 5 **Beautiful** 1 2 3 4 5 **Tidy** 1 2 3 4 5 **How characteristic are the below words of an obese person:**

1 = Not at all characteristic 5 = Strongly characteristic

Normal 1 2 3 4 5 **Active** 1 2 3 4 5 **Unconfident** 1 2 3 4 5 **Caring** 1 2 3 4 5

Artistic 1 2 3 4 5

1 = Not at all characteristic 5 = Strongly characteristic

Easygoing 1 2 3 4 5

Vain 1 2 3 4 5

Clean 1 2 3 4 5

Weak 1 2 3 4 5

Loud 1 2 3 4 5

Violent 1 2 3 4 5

Rude 1 2 3 4 5

Selfish 1 2 3 4 5

Lazy 1 2 3 4 5

Violent 1 2 3 4 5

Organised 1 2 3 4 5

Disgusting 1 2 3 4 5

Economical 1 2 3 4 5

Anxious 1 2 3 4 5

Dirty 1 2 3 4 5

Happy 1 2 3 4 5

Musical 1 2 3 4 5

Ugly 1 2 3 4 5

Boring 1 2 3 4 5

Insecure 1 2 3 4 5

1 = Not at all characteristic 5 = Strongly characteristic

Jolly 1 2 3 4 5 **Greedy** 1 2 3 4 5 **Fit** 1 2 3 4 5 **Petite** 1 2 3 4 5 **Balanced** 1 2 3 4 5 **Unorganised** 1 2 3 4 5 **Beautiful** 1 2 3 4 5 **Tidy** 1 2 3 4 5

Debriefing sheet

Thank you for taking part in the “Characteristics of people of different shapes” questionnaire. The aim of this pilot questionnaire is to investigate how strongly specific characteristics are associated with people of different shapes. Past research has shown that people associate different qualities depending on people’s body shape. For example, endomorphs (people of round shape) are often associated with being humorous and happy; mesomorphs (muscular shape) as athletic; and ectomorphs (thin and delicate shape) as intelligent and quiet. A number of reasons can be offered to explain why these stereotypes (beliefs about groups) are associated with different body types, for example, the influence of media and your own experiences with people of different body shapes. Whatever the reason, it is an important area for research. One reason for this research is to investigate if these stereotypes lead to differential treatment of people depending on their body shape. For example, it has been shown that obese people can be discriminated against because of their weight. The results of this questionnaire are used to select the stereotypes to be investigated for future studies, which aim to reduce such discrimination and disadvantage.

It is important to note that everybody uses stereotypes, some of them being more positive than others. Using such stereotypes does not necessarily lead to negative consequences, people use positive stereotypes everyday. For instance, associating intelligence with ectomorphs and happiness with endomorphs is perceived as positive by most.

All information collected will remain anonymous and confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix D: Results for the stimuli words for the LDT and the Stroop task.

Separate repeated measures ANOVAs were conducted with each of the words with the category as the repeated measures factor (Category: obese/thin/average).

Stereotype consistent words – For the word ‘lazy’, a significant main effect of category was found with $F(2, 32) = 43.98, p < .05, \eta_p^2 = .73$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 4.06$ vs. 1.94 vs. 2.41). For the word ‘disgusting’, a significant main effect of category was found with $F(2, 32) = 7.95, p < .05, \eta_p^2 = .33$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 3.06$ vs. 2.29 vs. 2.06). For the word ‘ugly’, a significant main effect of category was found with $F(2, 32) = 11.65, p < .05, \eta_p^2 = .42$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 3.47$ vs. 2.24 vs. 2.12). For the word ‘greedy’, a significant main effect of category was found with $F(2, 32) = 7.35, p < .05, \eta_p^2 = .31$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 3.24$ vs. 2.24 vs. 2.24). For the word ‘dirty’, a significant main effect of category was found with $F(2, 32) = 6.55, p < .05, \eta_p^2 = .29$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 2.94$ vs. 1.94 vs. 2.18).

Stereotype inconsistent words - For the word 'active', a significant main effect of category was found with $F(2, 32) = 70.61, p < .05, \eta_p^2 = .82$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 1.47$ vs. 4.06 vs. 3.65). For the word 'clean', a significant main effect of category was found with $F(2, 32) = 24.34, p < .05, \eta_p^2 = .60$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 2.41$ vs. 3.82 vs. 3.65). For the word 'fit', a significant main effect of category was found with $F(2, 32) = 57.16, p < .05, \eta_p^2 = .78$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 1.59$ vs. 4.06 vs. 3.88). For the word 'beautiful', a significant main effect of category was found with $F(2, 32) = 15.54, p < .05, \eta_p^2 = .49$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 2.24$ vs. 3.41 vs. 3.59). For the word 'organised', a significant main effect of category was found with $F(2, 32) = 16.92, p < .05, \eta_p^2 = .51$. Post hoc tests (Tukey, $p < .05$) found there to be a difference between the ratings between the obese category from thin and average size, but not between thin and average size ($M_s = 2.47$ vs. 3.76 vs. 3.24).

Stereotype irrelevant words – No significant main effects between the categories were found for the words 'artistic' ($M_s = 2.88$ vs. 3.12 vs. 2.88), 'rude' ($M_s = 2.71$ vs. 2.71 vs. 2.47), 'economical' ($M_s = 2.60$ vs. 2.70 vs. 2.95), 'boring' ($M_s = 2.55$ vs. 2.65 vs. 2.65) or 'musical' ($M_s = 2.85$ vs. 2.70 vs. 2.80).

Appendix E: Stimulus words for the Lexical Decision Task.

Target Words	Matching word to be changed into a non-word	Non-word
Ugly (4)	Vent	Jent
Greedy (6)	Paddle	Gaddle
Dirty (5)	Video	Lideo
Lazy (4)	Loop	Leop
Disgusting (10)	Reputation*	Teputation
Fit (3)	Nut	Vut
Beautiful (9)	Gratitude*	Gretitude
Organised (9)	Knowledge*	Knwledge
Active (6)	Hammer	Vammer
Clean (5)	Noise	Koise
Economical (10)	Outrageous*	Sutrageous
Rude (4)	Glue	Gluo
Artistic (8)	Hostage	Histages
Musical (7)	Embassy	Ombassy
Boring (6)	Petrol	Detrol
Practice words		
Pathway	Bottle	Fottle
Museum	Vacuum	Vakuum
Building	Product	Droduct
Volcano	Square	Squale

Note. The numbers in brackets indicate the number of letters in each word.

* = non-words created by the author.

Appendix F: Pilot study, Information sheets for the control and experimental conditions.

**University of Canterbury
Psychology**

Department of

Information

You are invited to take part in a study, titled “Word and picture categorisation under time pressure”. The aim of the study is to investigate how quickly and accurately people group words and pictures into categories.

Your involvement in this study will include completing four computer-based tasks, requiring you to classify words and pictures into different categories.

You have the right to withdraw from the study at any time, including withdrawal of any information provided. All data collected will remain confidential and anonymous.

The study will take approximately 20 minutes to complete. There is no perceived risk present. You will receive a \$5 gift voucher as a thank you for participating.

The results of the present study may be published, but you are assured of the complete confidentiality and anonymity. To ensure this, all data is collected anonymously and the data can only be accessed by the experimenter and her supervisors.

The present study is completed as part of PhD research by Sanna Malinen, supervised by Assoc Prof Lucy Johnston and Dr Ewald Neumann. Sanna will be happy to answer any questions you may have about the study, and can be reached via email on skm37@student.canterbury.ac.nz. Assoc Prof Johnston and Dr Neumann can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch.

The project has been reviewed and approved by the University of Canterbury Human Ethics Committee.

**University of Canterbury
Psychology**

Department of

Information

You are invited to take part in a study, titled “Categorising body shapes and words under time pressure”. The aim of the study is to investigate people’s attitudes and beliefs about overweight people and how people are able to control their biases.

Your involvement in this study will include completing four computer-based tasks, requiring you to classify words and pictures into different categories. The first two tasks’ aim is to give us a baseline of your response speed, and the subsequent two tasks are the actual categorisation tasks.

You have the right to withdraw from the study at any time, including withdrawal of any information provided. All data collected will remain confidential and anonymous.

The study will take approximately 20 minutes to complete. There is no perceived risk present. You will receive a \$5 gift voucher as a thank you for participating.

The results of the present study may be published, but you are assured of the complete confidentiality and anonymity. To ensure this, all data is collected anonymously and the data can only be accessed by the experimenter and her supervisors.

The present study is completed as part of PhD research by Sanna Malinen, supervised by Assoc Prof Lucy Johnston and Dr Ewald Neumann. Sanna will be happy to answer any questions you may have about the study, and can be reached via email on skm37@student.canterbury.ac.nz. Assoc Prof Johnston and Dr Neumann can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch.

The project has been reviewed and approved by the University of Canterbury Human Ethics Committee.

Appendix G: Pilot study Debriefing Sheet

University of Canterbury

Department of Psychology

Debriefing Sheet

Thank you for taking part in this study, which is part of my PhD research.

The full title of my PhD is: “Implicit Attitudes: Their malleability and the influence on behaviour”. This particular study aims to investigate whether people’s implicit attitudes, those attitudes which exist outside full awareness, can be altered. Attitudes are the beliefs and feelings individuals hold about things. They can be classified into two types, namely, explicit and implicit attitudes. Explicit attitudes are those which people are aware of, and expressed when asked about. In contrast, implicit attitudes are feelings, which individuals might not be aware of having. Furthermore, in contrast to explicit attitudes, implicit attitudes have been traditionally thought of as fairly stable and non-malleable. However, recent research has found implicit attitudes to be malleable, that is, a change in the implicit attitudes can be observed after an experimental intervention. The present study aims at repeating this finding.

The specific attitude in question was the attitude towards overweight people. This social group has been previously found to have negative stereotypes and prejudicial attitudes attached to it. Because of such negative attitudes, overweight people may encounter discrimination and be disadvantaged in a number of situations, such as selection interviews for employment. The present study is aiming at investigating whether such negative (implicit) attitudes can be changed by instructing people to avoid their biases, in order to reduce the occurrence of such prejudice and discrimination in the future. It is vital to note here that holding such stereotypes or prejudicial attitudes is **very common** and **completely normal**. Future studies will investigate whether this change in attitudes does indeed lead to a change in associated behaviors.

The implicit attitudes were measured by the Go / No-go Association Task (GNAT), the Implicit Association Test (IAT), the Lexical Decision Task (LDT), and the Stroop Task. The GNAT and the IAT measured the participants’ prejudice towards the target group, that is, their evaluations of the group. The Stroop task and the LDT measured the participants’ stereotypes that they associate with the group, that is, the beliefs they have about the group.

The GNAT recorded the response times and correct responses for “congruent trials” (those in which the target category ‘overweight’ and category ‘unpleasant’ were presented at the same time) and “incongruent trials” (those in which the target category ‘overweight’ and category ‘pleasant’ were presented at the same time). Analysis will be made according to the correct responses (hits / correct rejections) and the incorrect responses (false alarms / misses) to determine the strength of the bias one may hold. The stronger the association of overweight people with the category ‘unpleasant’, more accurate will that person be on the congruent trials.

The IAT uses a similar logic to the GNAT, but instead of having only a single target category ‘overweight’, the IAT uses two opposing categories, ‘overweight’ and ‘healthy weight’, and measures the association as a relative measure between these two response categories. The stronger the association of overweight people + ‘unpleasant’ and healthy weight + ‘pleasant’ (“congruent” blocks) as compared with overweight + ‘pleasant’ and healthy weight + ‘unpleasant’ (“incongruent” blocks), the easier the participants will find the task and faster their response times will be. Accordingly, the difference between incongruent and congruent trials is taken as an index of the strength of bias.

The Stroop Task records the reaction times for responding to the colour in which the words were written in. The words come from three different categories; stereotype consistent (e.g. lazy), stereotype inconsistent (e.g. fit) or irrelevant words (e.g. economical). The slower the response times are for the stereotype consistent words, the more are the stereotypes of overweight people activated. That is, the activation of the stereotypes makes the participant to respond slower to the stereotype consistent words, as it is less easy to ignore the meaning of the word and concentrate on naming the colour.

The LDT records the reaction times for the correct responses for identifying whether a letter string is a word or a non-word. Identical to the Stroop task, the words come from three different categories; stereotype consistent, stereotype inconsistent and irrelevant. The faster the response times are to the stereotype consistent words, the more are the stereotypes of overweight people activated. In contrast to the Stroop task, the activation of the stereotypes makes it easier (and hence faster) for people to identify the stereotype consistent word as a word.

The present study has two conditions; the control group and an experimental group. In the experimental condition, the participants were instructed to respond as fairly as possible in the

second set of the computerised tasks (GNAT & IAT). Specifically, the participants were asked to respond in the same way to each trial, regardless of the picture or word presented. It is expected that the participants would show less negative stereotyping and prejudicial attitudes after such instruction. The control condition participants simply completed the computerised tasks without any additional instructions.

All information collected will remain anonymous and confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix H: Stimuli photographs for the Implicit Association Test

Younger females:



Note. Studies 1, 2a and 2b used photographs 1-5. In Study 3, photograph 4 was changed to photograph 6.

Older females:



Younger males:



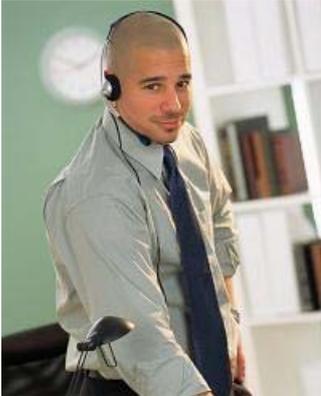
1.



2.



3.

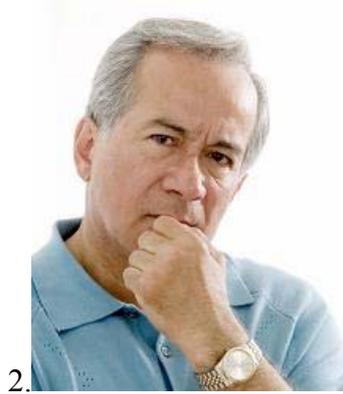


4.



5.

Older males:



Appendix I: Study 1 Information Sheet

**University of Canterbury
Psychology**

Department of

Information

You are invited to take part in a study titled “Word and picture categorisation under time pressure”. The aim of the study is to investigate how quickly and accurately people group words and pictures into categories.

Your involvement in this study will include two parts; the first one being an open ended survey and the second a simple computer-based task, requiring you to classify words and pictures into different categories.

You have the right to withdraw from the study at any time, including withdrawal of any information provided. All data collected will remain confidential and anonymous.

The study will take approximately 15 minutes to complete, and there is no perceived risk present. You will be given a \$5 UCSA (Brazilia café) voucher as a thank you for participating.

The results of the present study may be published, but you are assured of the complete confidentiality and anonymity. To ensure this, all data is collected anonymously and the data can only be accessed by the experimenter and her supervisors.

The present study is completed as part of PhD research by Sanna Malinen, supervised by Assoc Prof Lucy Johnston. Sanna will be happy to answer any questions you may have about the study, and can be reached via email on skm37@student.canterbury.ac.nz. Assoc Prof Johnston can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch. The project has been reviewed and **approved** by the University of Canterbury Human Ethics Committee.

Appendix J: Study 1 Debriefing Sheet

University of Canterbury

Department of Psychology

Debriefing Sheet

Thank you for taking part in this study, which is completed as part of my PhD research.

The full title of the study is: “Implicit Attitudes: Their malleability and the influence on behaviour”. The study aims to investigate whether people’s implicit attitudes, those attitudes which exist outside conscious awareness, can be altered. Attitudes are the beliefs and feeling individuals hold about things. They can be classified into two types, namely, explicit and implicit attitudes. Explicit attitudes are those which people are aware of, and expressed when asked about. In contrast, implicit attitudes are unconscious feelings, which individuals might not be aware of. Furthermore, in contrast to explicit attitudes, implicit attitudes have been traditionally thought of as fairly stable and non-malleable. However, recent research has found implicit attitudes to be malleable, that is, a change in the implicit attitudes can be observed after an experimental intervention. The present study aims at repeating this finding.

The specific attitude in question was the attitude towards older workers. Older workers have been previously found to have negative stereotypes and prejudicial attitudes attached to them. Because of such negative attitudes, older workers may encounter discrimination and be disadvantaged in a number of situations, such as selection interviews for employment. The present study is aiming at investigating whether such negative (implicit) attitudes can be changed with an intervention, in order to reduce the occurrence of such prejudice and discrimination in the future. It is vital to note here that holding such stereotypes or prejudicial attitudes is **very common** and **completely normal**.

The implicit attitudes were measured by an Implicit Association Test (IAT). The IAT was measuring the participants’ prejudice towards the target group, that is, their evaluations of the group.

The IAT recorded the response time for “congruent trials” (those in which the target

category ‘older worker’ and ‘bad’ words had the same response key) and “incongruent trials” (those in which the target category ‘older worker’ and ‘good’ words had the same response key). The difference in these response times is used as a measure of attitudes – the more strongly one associates the target category ‘older worker’ with bad words the faster responses to the congruent than the incongruent trials are.

The present study has two conditions, the control group and an experimental group. Before completing the IAT, the experimental group participants were instructed to name three respected and valued older workers from their surroundings and to indicate why they consider these individuals to be valued and respected. It is expected that the participants would show less negative attitudes after such instructions due to the increased number of counter-stereotypical (i.e. positive) examples of older workers brought to mind. The control group completed the IAT as the experimental group, but were asked to imagine three holiday destinations instead. It is expected that the experimental group will show less implicit bias towards older workers as compared with the control group.

All information collected will remain anonymous and confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix K: Semantic differential scales

University of Canterbury

Department of Psychology

‘Opinions about older and younger workers’

In this task you are asked to indicate to what extent you believe the traits below are characteristic of the group specified *in general*. Please draw a line on the horizontal scale to indicate your response. The bipolar scales range from a negative pole to a positive pole, but please take care to note that the positive / negative poles of the scales are not always on the same side of the page.

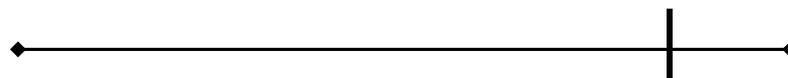
There is no correct answer to these ratings, as we are simply interested in your opinions. Please answer honestly and do not spend too long on each question. Once again we remind you that all the information is anonymous and confidential.

Example

Please indicate to what extent the below characteristic is true for PUPPIES in general.

Ugly

Cute



Draw a vertical line to indicate your response.

Please indicate to what extent the below characteristics is true for YOUNGER WORKERS (between the ages of 25-35) in general.

Unmotivated  Motivated

Flexible  Inflexible

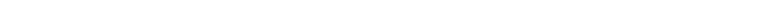
Productive  Unproductive

Unpleasant  Pleasant

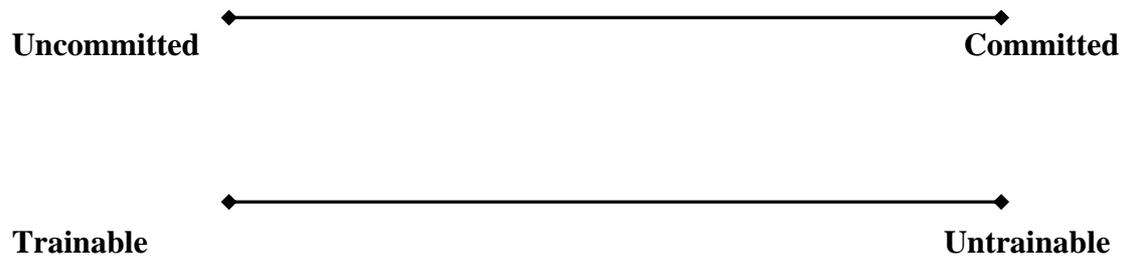
Disorganised  Organised

Cooperative  Uncooperative

Reliable  Unreliable

Bad  Good

Uncommitted  Committed



End of questionnaire. Please let the experimenter know you have finished.

Appendix L: Feeling thermometer scales

University of Canterbury
Psychology

Department of

“Opinions about older and younger workers”

Please draw a line (-) on the vertical line below, indicating how you feel about the specified group *in general*. The lower end of the vertical line indicates very negative feeling and the high end of the line indicates very positive feeling toward the group. There is no correct answer to these ratings, as we are simply interested in your opinions. Please answer honestly and do not spend too long on each question. Once again we remind you that all the information is anonymous and confidential.

How do you feel about younger workers (i.e. between the ages of 25 to 35)?

‘Very positive’



‘Very negative’

Please turn over
→

How do you feel about older workers (i.e. above the age of 45)?

‘Very positive’



‘Very negative’

End of questionnaire. Please let the experimenter know you have finished.

Appendix M: Internal and External Motivation to Respond without Bias scales.

University of Canterbury

Department of Psychology

“Opinions about older workers”

Please indicate the extent to which you agree with each of the following statements. Do this by circling the appropriate number on each of the scales below – the more you agree with a statement the higher the number you should circle. There are no correct answers to these ratings, as we are simply interested in your opinions. Please answer honestly and do not spend too long on each question. Once again we remind you that all the information is anonymous and confidential. Please note that by ‘older workers’, we mean individuals above the age of 45.

- 1. According to my personal values, using stereotypes about others, including older workers is OK.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 2. I am personally motivated by my beliefs to be unbiased towards others, including older workers.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 3. Being unbiased towards others, including older workers, is important to my self-concept.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 4. Because of my personal values, I believe that using stereotypes about others, including older workers, is wrong.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 5. I attempt to act in an unbiased ways toward others, including older workers, because it is personally important to me.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 6. Because of today's PC (politically correct) standards I try to appear unbiased toward others, including older workers.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 7. I try to hide any negative thoughts about others, including older workers, in order to avoid negative reactions from others.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 8. If I acted biased toward others, including older workers, I would be concerned that others would be angry with me.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

- 9. I attempt to appear unbiased toward others, including older workers in order to avoid disapproval from others.**

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

10. I try to act in unbiased ways because of pressure from others.

1 2 3 4 5 6 7 8 9
Strongly disagree Strongly agree

End of questionnaire. Please let the experimenter know you have finished.

Appendix N: Study 2a Demographic questionnaire

University of Canterbury

Department of Psychology

‘Opinions about employees with different characteristics’

In this final questionnaire, you are asked to indicate some demographics and some specific questions about your work experience. Please answer honestly. Once again we remind you that all the information is anonymous and confidential.

Sex: M / F (circle)

Age: _____ years

Ethnicity: _____

- **Your educational background:** (e.g. 5th form cert., BSc, MA, completing a BA, etc.; Please also include your major subjects, e.g. BA in Psychology and Anthropology).

- **Your work experience:** Do you have any work experience? **YES / NO**

- **If yes,** please indicate how long you have been in (any type of) employment:

Part time _____ years _____ months

Full time _____ years _____ months

- **If yes, did/do you work with any older workers (i.e. older than 45 years) YES / NO**

- **Do you have any Human Resource Management and/or Industrial & Organisational Psychology qualifications, or are you studying towards one?**

YES / NO

If Yes, please give details:

- **Do you have any experience in employee recruitment and selection procedures/practices? YES / NO**

If Yes, please indicate your work experience in months: _____ months.

- **On a scale from 1 to 5, how would you describe your practical experience with employee recruitment and selection procedures/practices?
Please circle the appropriate number from 1 (no experience) to 5 (very experienced).**

No experience 1 2 3 4 5 Very experienced

- **On a scale from 1 to 5, how would you describe your knowledge of employee recruitment and selection procedures/practices?
Please circle the appropriate number from 1 (no knowledge) to 5 (very knowledgeable).**

No knowledge 1 2 3 4 5 Very knowledgeable

End of questionnaire. Please let the experimenter know you have finished.

Appendix O: Study 2a Information Sheet

**University of Canterbury
Psychology**

Department of

Information

You are invited to take part in a two part study, titled “Opinions about employees with different characteristics”. The aim of the study is to investigate individuals’ opinions about older and younger workers.

Your involvement in this study will include two parts; both sessions include some brief questionnaires and a computer task.

You have the right to withdraw from the study at any time, including withdrawal of any information provided. All data collected will remain confidential and anonymous.

The study will take approximately 20-30 minutes to complete (per session), and there is no perceived risk present. You will be given a \$5 gift voucher as a thank you for participating.

The results of the present study may be published, but you are assured of the complete confidentiality and anonymity. To ensure this, all data is collected anonymously and the data can only be accessed by the experimenter and her supervisors.

The present study is completed as part of PhD research by Sanna Malinen, supervised by Assoc Prof Lucy Johnston. Sanna will be happy to answer any questions you may have about the study, and can be reached via email on skm37@student.canterbury.ac.nz. Assoc Prof Johnston can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch.

The project has been reviewed and **approved** by the University of Canterbury Human Ethics Committee.

Appendix P: Study 2a Debriefing Sheet

University of Canterbury

Department of Psychology

Debriefing Sheet

Thank you for taking part in this study, which is completed as part of my PhD research.

The full title of the study is: “Implicit Attitudes: Their malleability and the influence on behaviour”. The study investigates whether people’s implicit attitudes, those attitudes which exist outside the individual’s awareness, can be altered.

Attitudes are the beliefs and feeling individuals hold about things. They can be classified into two types, namely, explicit and implicit attitudes. Explicit attitudes are those which people are aware of, and expressed when asked about. In contrast, implicit attitudes are feelings which individuals might not be fully aware of. Furthermore, in contrast to explicit attitudes, implicit attitudes have been traditionally thought of as fairly stable and non-malleable. However, recent research has found implicit attitudes to be malleable, that is, a change in the implicit attitudes can be observed after an experimental intervention. The present study aims to repeat this finding and to extend this research.

The specific attitude in question is the attitude towards older workers relative to younger workers. Older workers have been previously found to have negative stereotypes and prejudicial attitudes attached to them. Because of such negative attitudes, older workers may encounter discrimination and be disadvantaged in a number of situations, such as recruitment and selection procedures for employment. The present study aims at investigating whether such negative attitudes can be changed with an intervention, in order to reduce the occurrence of such prejudice and discrimination in the future. It is vital to note here that holding such prejudicial attitudes is **very common** and **completely normal**.

We are also interested in individual’s motivations to respond without bias. That is, it is well established that people differ to the extent to which they are motivated to control the expression of their biased beliefs. The motivation was assessed by two scales, measuring both internal and external motivation to respond bias. Internal motivation reflects an internalised, personal motivation to respond without bias, where as the external motivation reflects motivation due to public pressure to respond without bias. Previous research has found that individuals high in internal motivation tend to respond with less bias than those motivated

externally, on both implicit and explicit attitude measures. In this research we are interested in replicating this finding in the topic area of ageism.

The implicit attitudes were measured by an Implicit Association Test (IAT). The IAT was measuring the participants' prejudice towards the target group, that is, their evaluations of the group. The IAT recorded the response time for "congruent trials" (those in which the target category 'older worker' and 'bad' words had the same response key) and "incongruent trials" (those in which the target category 'older worker' and 'good' words had the same response key). The difference in these response times is used as a measure of attitudes – the more strongly one associates the target category 'older worker' with bad words the faster responses to the congruent than the incongruent trials are.

The explicit attitudes were measured with two different scales. The semantic differential scales asked you to rate on a bipolar scale to what extent you thought specific attributes were reflective of older and younger workers, and the feeling thermometer simply asked you to indicate your general feelings about older and younger workers on a scale from 0 to 100. Based on previous research, it is expected that most individuals would show slightly negative attitudes towards older workers as compared with younger workers, at least in most traits (e.g. productive, flexible).

Finally we also asked about your experiences in recruitment practices. We are interested whether those individuals who have experience in recruitment practices reveal different attitudes to those individuals who do not have such experience.

The present study has two conditions, the control group and an experimental group. In the second session, the experimental group participants were instructed to name three respected and valued older workers from their surroundings and to indicate why they consider these individuals to be valued and respected. It is expected that the participants would show less negative attitudes after such instructions due to the increased number of counter-stereotypical (i.e. positive) examples of older workers brought to mind. The control group completed the IAT and the explicit attitude measures as the experimental group, but were asked to imagine three holiday destinations instead. It is expected that the experimental group will show less implicit bias towards older workers as compared with the control group.

All information collected will remain anonymous and confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix Q: Study 2b Debriefing sheet

University of Canterbury

Department of Psychology

Debriefing Sheet

Thank you for taking part in this study, which is completed as part of my PhD research.

The full title of the study is: “Implicit Attitudes: Their malleability and the influence on behaviour”. The study investigates whether people’s implicit attitudes, those attitudes which exist outside the individual’s awareness, can be altered.

Attitudes are the beliefs and feeling individuals hold about things. They can be classified into two types, namely, explicit and implicit attitudes. Explicit attitudes are those which people are aware of, and expressed when asked about. In contrast, implicit attitudes are feelings which individuals might not be fully aware of. Furthermore, in contrast to explicit attitudes, implicit attitudes have been traditionally thought of as fairly stable and non-malleable. However, recent research has found implicit attitudes to be malleable, that is, a change in the implicit attitudes can be observed after an experimental intervention. The present study aims to repeat this finding and to extend this research.

The specific attitude in question is the attitude towards older workers relative to younger workers. Older workers have been previously found to have negative stereotypes and prejudicial attitudes attached to them. Because of such negative attitudes, older workers may encounter discrimination and be disadvantaged in a number of situations, such as recruitment and selection procedures for employment. The present study aims at investigating whether such negative attitudes can be changed with an intervention, in order to reduce the occurrence of such prejudice and discrimination in the future. It is vital to note here that holding such prejudicial attitudes is **very common** and **completely normal**.

The implicit attitudes were measured by an Implicit Association Test (IAT). The IAT was measuring the participants’ prejudice towards the target group, that is, their evaluations of the group. The IAT recorded the response time for “congruent trials” (those in which the target category ‘older worker’ and ‘bad’ words had the same response key) and “incongruent trials” (those in which the target category ‘older worker’ and ‘good’ words had the same response key). The difference in these response times is used as a measure of attitudes – the more

strongly one associates the target category 'older worker' with bad words the faster responses to the congruent than the incongruent trials are.

The explicit attitudes were measured with two different scales. The semantic differential scales asked you to rate on a bipolar scale to what extent you thought specific attributes were reflective of older and younger workers, and the feeling thermometer simply asked you to indicate your general feelings about older and younger workers on a scale from 0 to 100. Based on previous research, it is expected that most individuals would show slightly negative attitudes towards older workers as compared with younger workers, at least in most traits (e.g. productive, flexible).

Finally we also asked about your experiences in recruitment practices. We are interested whether those individuals who have experience in recruitment practices reveal different attitudes to those individuals who do not have such experience.

The present study has two conditions, the control group and an experimental group. In the second session, the experimental group participants were instructed to name three respected and valued older workers from their surroundings and to indicate why they consider these individuals to be valued and respected. It is expected that the participants would show less negative attitudes after such instructions due to the increased number of counter-stereotypical (i.e. positive) examples of older workers brought to mind. The control group completed the IAT and the explicit attitude measures as the experimental group, but did not complete such an imagery exercise. It is expected that the experimental group will show less implicit bias towards older workers as compared with the control group.

All information collected will remain anonymous and confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix R: Study 2b Demographic questionnaire

University of Canterbury

Department of Psychology

‘Opinions about employees with different characteristics’

In this final questionnaire, you are asked to indicate some demographics and some specific questions about your work experience. Please answer honestly. Once again we remind you that all the information is anonymous and confidential.

Personal Details

Sex: M / F (circle)

Age: _____ years

Ethnicity: _____

Education**What is your educational background?**(I.e. 5th form cert., HRM diploma, BSc, MA, *completing* a BA, etc.;Please also include your major subjects, e.g. BA in Psychology and Anthropology).

Do you have any Human Resource Management and/or Industrial & Organisational Psychology qualifications, or are you studying towards one? Yes / No

If Yes, please give details:

Work Experience

What is your current occupation?

In what industry do you work in? (e.g. health, transport etc.)

In your current role, are you involved in selecting employees (i.e. do you have a say whether someone gets employed)? YES / NO

If yes, are you the sole person responsible for selecting employees? YES / NO

If yes, how long have you been in a position that involves employee selection responsibilities? Please include all roles you've had involving such responsibility, not just your current position.

_____ years _____ months

If yes, have you had any training specifically related to interviewing and/or employee selection practices? YES / NO

If yes, did the training include issues relating to potential biases occurring during an interview/selection process? YES / NO

On a scale from 1 to 5, how would you describe your practical experience with employee recruitment and selection procedures/practices? (I.e. selecting employees, rather than being the applicant).

Please circle the appropriate number from 1 (no experience) to 5 (very experienced).

No experience 1 2 3 4 5 Very experienced

On a scale from 1 to 5, how would you describe your knowledge of employee recruitment and selection procedures/practices?

Please circle the appropriate number from 1 (no knowledge) to 5 (very knowledgeable).

No knowledge 1 2 3 4 5 Very knowledgeable

End of questionnaire. Please let the experimenter know you have finished.

Appendix S: Study 3 Interview questions and answers.

Conf # _____

Interview questions & C answers

Part # _____

Interview order _____

- For each question, please pause for 5-10 seconds before answering.
- Pause in between sentences, as you would in a normal conversation.
- Use fillers, such as ‘hmmmm’ as you would in a normal conversation.

Set 1.**Rapport building:**

C – [in a friendly manner] “Hi XXX [participant name, after experimenter has introduced him/her], how are you?”. [Wait until experimenter leaves the room, and say] “Have they given you the questions to ask? [wait for reply, comment if needed, in a friendly manner]...Should we just get started?”

1. *In this position you are likely to come across some difficult people management situations. How would you deal with an angry and confrontational client on the phone?*

I would ask them firstly to calm down and ask how I could help them. If this didn't work, I would then let them know that it would be better if they would call me back when we could talk about things calmly. If that didn't work, I'd tell them that my supervisor would give them a call later if they wanted, but that I would now hang up. I'd then politely end the phone call and hang up, and let my supervisor know what happened.

2. *Could you describe a time when you have to make a spur of the moment decision? How did your decision affect others?*

When I had a part-time job in a printery, a client asked me to print his order on a better quality paper but at the same price as quoted for a lower quality paper. It was a very large order, so I knew it was important to keep the client happy. As it was the end of the day, no one else was in the shop. I tried calling my supervisor, but she didn't answer. I told the client that I could give him a call back first thing the next day, but he didn't want to wait and wanted an answer straight away. Since he was an important client and the better quality paper was only a few cents more, I made the decision to do the printing for him on the higher quality paper. My supervisor was very pleased with my decision, particularly, as I'd tried to contact her first before making the decision. I think I ended up making the company a bit of money too, while providing a high standard of customer service.

3. *Can you tell me about a time when you had to find information very quickly and efficiently? What was the situation (i.e. why was it so important to find the information) and what was the outcome?*

Well, at my work, I get a lot of enquiries all the time and you do have to be really efficient in giving responses, especially if you're on the phone. An example that comes to mind is quite different though..... towards the end of the university year all assignments seem to be due at the same time ("you know how it is" [smile]), and sometimes you just don't have the time to prepare for all the assignments as well as you'd like. Without taking shortcuts, you do need to become really efficient in research and finding out information. And it's obviously very important, because your grades depend on this. In terms of outcomes – I think I've become quite practiced at information finding.

4. *Could you please describe a time where you have had to work as part of a successful team? Describe what made the team so successful and what part you played in it?*

[Ask the participant to repeat the question]

As part of a project for a Uni paper, I had to work in a team. The assignment was quite demanding and involved a number of different tasks. It worked out great; we got a good mark and felt really pleased with ourselves. I think the team was successful as everyone took responsibility and did their bit. I think there was a pressure from everyone not to let the team down. We also felt really comfortable asking each other for help. I think I did my bit, and was also helpful towards the other team members.

5. *Communication skills are essential in any job. Give me two examples that illustrate that you have good communication skills.*

I deal with lots of people on a daily basis in my job, both face to face and also on the phone. Having to talk to so many different kinds of people all the time has really taught me to be a good listener and also to adjust my way of communicating depending on the situation. Like, if someone wants to chat, I'll chat, but if someone is in a hurry, then I will just get on with the job.

I suppose a second example could be from university. We have to do quite a few presentations in my course and I've received really positive feedback from people, both other students and my lecturers. I do quite enjoy it as well, which helps.

Set 2.

[Wait until the participant tells you that that was the last question. Then say -] “Well that wasn’t so bad. [wait for comment] I think we can open the door now”.

- For each question, please pause for 5-10 seconds before answering.
- Pause in between sentences, as you would in a normal conversation.
- Use fillers, such as ‘hmmmmmm’ as you would in a normal conversation.

Rapport building:

C – [in a friendly manner] “Hi XXX [participant name, after experimenter has introduced him/her], how are you?”. [Wait until experimenter leaves the room and say] “Have you already done an interview today? [wait for reply, comment if needed, in a friendly manner]...I’m ready when you are.”

1. In this position you are likely to come across some difficult people management situations. How would you deal with an angry and confrontational client in a face-to-face situation?

I’d ask them to sit down and ask how I could help them. If this didn’t calm them down, I’d then let them know that it might be better if they could come back when they’d calmed down. If this didn’t work, I’d ask them to leave. And if none of that worked I would tell them that I would call security and that he/she would then be escorted out of the building. I’d also let my supervisor know what happened.

2. Could you tell me about a situation when you have had to work on a multiple tasks or projects concurrently? How did you manage the workload?

Just recently I've been doing part-time work, while studying. I've had many assignments due around the same time, which has definitely required some multi-tasking. To manage the workload I plan my day and usually also the week, and make sure I have enough time to complete everything. Sometimes that means I have to miss out on other things, like social activities, but usually I can fit things in, as long as I've pre-planned and also prioritised the tasks.

3. *Giving advice to people is a big part of this role. Can you tell me about a previous situation when you've had to give advice to someone where the person did not want to hear it or wasn't happy with the advice?*

[Ask the participant to repeat the question]

I can think of a situation from just a few weeks ago. A class mate of mine came for some advice on her essay – it was for a paper that I'd done last year. It was kind of a difficult situation, because after reading her essay, which was actually written really well, I thought...that she hadn't actually understood the question, kind of missed the point I suppose. It was quite awkward, but I had to tell her – better telling her than her getting a bad mark at the end (right? *[smile]*). I did approach the topic quite subtly, by offering suggestions rather than telling her more directly. She did take it well though, which was good.

4. *Building a rapport is sometimes a very challenging thing to do. Describe a time when you had to maintain effective relationships in a challenging situation.*

I can think of one paper from this year, where we had to complete a group assignment. It was quite a big assignment and worth a bit, so everyone wanted to get a good mark for it. Unfortunately there was one group member who most of us clashed with – he just wasn't too keen on doing his bit and was quite argumentative. But because the assignment had quite a few parts to it, we really needed every group member to work on it. I tried to make compromises that would work with everyone and just kept communicating with him, keeping him informed with what everyone

was doing. I think it worked – most probably because he started seeing that everyone else was working so hard, so he ended up doing quite a bit too. But it was a challenging situation.

5. *Can you give me an example when you had to work without any guidance?*

At work I have to work independently quite a bit. My supervisor is often out and busy with other things. An example could be when I had to organise a forum for our team-leaders. There was quite a few things to put together, and my supervisor was away quite a bit then (he travels a lot). Because no one else in the office had done anything like this before, I knew I had to work on my own. I kept myself very organised and did a lot of preplanning. In the end it all came together and my supervisor (and the team-leaders) were quite impressed I think.

[Wait until the participant tells you that that was the last question. Then say -] “That was ok” [wait for a comment] I think that’s it [open the door]”.

Appendix T: Evaluation Sheet for Interview Questions and Answers

Please rate each question and answer according to the following criteria:

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

1. *In this position you are likely to come across some difficult people management situations. How would you deal with an angry and confrontational client on the phone?*

Answer: I would ask them firstly to calm down and ask how I could help them. If this didn't work, I would then let them know that it would be better if they would call me back when we could talk about things calmly. If that didn't work, I'd tell them that my supervisor would give them a call later if they wanted, but that I would now hang up. I'd then politely end the phone call and hang up, and let my supervisor know what happened.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

2. *Could you describe a time when you have to make a spur of the moment decision? How did your decision affect others?*

Answer: When I had a part-time job in a printery, a client asked me to print his order on a better quality paper but at the same price as quoted for a lower quality paper. It was a very large order, so I knew it was important to keep the client happy. As it was the end of the day, no one else was in the shop. I tried calling my supervisor, but she didn't answer. I told the client that I could give him a call back first thing the next day, but he didn't want to wait and wanted an answer straight away. Since he was an important client and the better quality paper was only a few cents more, I made the decision to do the printing for him on the higher quality paper. My supervisor was very pleased with my decision, particularly, as I'd tried to contact her first before making the decision. I think I ended up making the company a bit of money too, while providing a high standard of customer service.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

-
-
- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

3. *Giving advice to people is a big part of this role. Can you tell me about a previous situation when you've had to give advice to someone where the person did not want to hear it or wasn't happy with the advice?*

Answer: I can think of a situation from just a few weeks ago. A class mate of mine came for some advice on her essay – it was for a paper that I'd done last year. It was kind of a difficult situation, because after reading her essay, which was actually written really well, I thought...that she hadn't actually understood the question, kind of missed the point I suppose. It was quite awkward, but I had to tell her – better telling her than getting a bad mark at the end. I did approach the topic quite subtly, and offered suggestions rather than telling her more directly. She did take it well though, which was good.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

4. *Could you please describe a time where you have had to work as part of a successful team? Describe what made the team so successful and what part you played in it?*

Answer: As part of a project for a Uni paper, I had to work in a team. The assignment was quite demanding and involved a number of different tasks. We split the tasks between use, each getting a fair share of the work. The outcome was great; we got a good mark and felt really pleased. I think the group was successful as everyone took responsibility and did their bit. I think there was a pressure from everyone not to let the team down. We also all felt really comfortable asking each other for help. I think I did my bit, but also was helpful towards the other team members.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

5. *Communication skills are essential in any job. Give me two examples that illustrate that you have good communication skills.*

Answer: I deal with lots of people on a daily basis in my job, both face to face and also on the phone. Having to talk to so many different kinds of people all the time has really taught me to be a better listener and also to adjust my way of communicating to the situation. Like, if someone wants to chat, I'll chat, but if someone is in a hurry, then I will just get on with the job.

I suppose a second example could be from university. We have to do quite a few presentations in my course and I've received really positive feedback from people,

both from other students and my lecturers. I do quite enjoy it as well, which helps.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

1. In this position you are likely to come across some difficult people management situations. How would you deal with an angry and confrontational client in a face-to-face situation?

Answer: I'd ask them to sit down and ask how I could help them. If this didn't calm them down, I'd then let them know that it might be better if they could come back when they'd calmed down. If this didn't work, I'd ask them to leave. And if none of that worked I would tell them that I would call security and that he/she would then be escorted out of the building. I'd also let my supervisor know what happened.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

2. *Could you tell me about a situation when you have had to work on multiple tasks or projects concurrently? How did you manage the workload?*

Answer: Just recently I've been doing part-time work, while studying. I've had many assignments due around the same time, which has definitely required some multi-tasking. To manage the workload I plan my day and usually also the week, and make sure I have enough time to complete everything. Sometimes I have to miss out on other things, like social activities, but usually I can fit things in, as long as I've pre-planned and also prioritised the tasks.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

3. *Can you tell me about a time when you had to find information very quickly and efficiently? What was the situation (i.e. why was it so important to find the information) and what was the outcome?*

Answer: Well, at my work, I get a lot of enquiries all the time and you do have to be really efficient in giving responses, particularly if you're on the phone. An example that comes to mind is quite different though, but towards the end of a university year all assignments seem to be due at the same time, and sometimes you just don't have the time to prepare for all assignments as well as you'd like to. Without taking shortcuts, you do need to become really efficient in research and finding out information. And it's obviously very important, because your grades depend on this. In terms of outcomes – I think I've become quite practiced at information finding.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

4. *Building a rapport is sometimes a very challenging thing to do. Describe a time when you had to maintain effective relationships in a challenging situation.*

Answer: I can think of one paper from last year, where we had to complete a group assignment. It was quite a big assignment and worth a bit, so everyone wanted to get a good mark for it. Unfortunately there was a group member who most of us clashed with – he just wasn't too keen on doing his bit and was quite argumentative. But because the assignment had quite a few parts to it, we really needed every group member to work on it. I tried to make compromises that would work with everyone and just kept communicating with him, keeping him informed with what everyone were doing. I think it worked – mostly probably because he started seeing that everyone else was working so hard, so he ended up doing quite a bit. But it was a challenging situation.

➤ What competency is the question assessing?

Competency: _____

➤ In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

-
-
- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

5. *Can you give me an example when you had to work without any guidance?*

Answer: At work I have to work independently quite a bit. My supervisor is often out and busy with other things. An example could be when I had to organise a forum for our New Zealand managers. There was quite a few things to put together, and my supervisor was away quite a bit then (he travels a lot). Because no one else in the office had done anything like this before, I knew I had to work on my own. I kept myself very organised and did a lot of preplanning. In the end it all came together and my supervisor (and the team-leaders) was quite impressed I think.

- What competency is the question assessing?

Competency: _____

- In your opinion, how well does the question assess the competency? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

- In your opinion, how would you evaluate the answer? Please indicate your responses by circling the appropriate number below (1 = poor, 7 = excellent).

Poor 1 2 3 4 5 6 7 Excellent

Please justify your rating:

Appendix U: Ratings Scales for targets' behaviour

Interviewee name _____ Judge # _____

Interview # _____ Participant # _____

Please rate the behaviour of the interviewee. For ratings which cannot be objectively measured (i.e. timed or counted), we are simply interested in your *general* perception of the interviewee's behaviour. That is, there are no right or wrong answers to these questions.

General ratings

Friendliness: How friendly, in general, did the interviewee seem towards the interviewer?

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all friendly Very Friendly

Eye contact: How much eye contact did the interviewee make with the interviewer?

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
None A lot

Abruptness / curtness: How abrupt was the interviewee in the situation?

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all Very abrupt

Interviewee's overall comfort level: How comfortable did the interviewee seem in the situation?

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all comfortable Very Comfortable

Interviewee's overall interest level: How interested did the interviewee seem toward the interview situation?

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
 Not at all interested Very Interested

Interviewee's overall level of engagement: How engaged did the interviewee seem in the interview situation?

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
 Not at all engaged Very Engaged

Interviewee's average body posture:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- 8 ----- 9
 Leaning away Sitting Straight up/ Leaning toward from
 interviewer Trunk is upright the interviewer

Quantitative ratings

_____ Number of times interviewee smiles during interview

_____ Number of times interviewee makes speech errors (e.g., stumbles over words)

_____ Number of speech hesitations, pauses, "umm", "hhmm", etc.

_____ Number of friendly, social comments the interviewee makes.

Any general comments about the interviewee's behaviour?

Appendix V. Comparability analyses for the targets' behaviour.

Independent sample t-tests were conducted on each of the behavioural items separately. Significant differences between the older and the younger targets were found with four of the eleven items, including ratings of eye contact, such that the younger target was rated as having more eye contact than the older target ($M_s = 7.00$ vs. 6.41 ; $t(52) = 3.17$, $p < .05$, $\eta_p^2 = .28$); body posture, such that the older target was found to lean more towards the interviewer than did the younger target ($M_s = 5.89$ vs. 4.81 ; $t(52) = -6.25$, $p < .05$, $\eta_p^2 = .59$); the number of smiles, such that the younger target was rated as smiling more than did the older target ($M_s = 10.07$ vs. 5.78 ; $t(52) = 5.27$, $p < .05$, $\eta_p^2 = .53$); and the number of speech hesitations, such that the older target was found to make more speech hesitations than did the younger target ($M_s = 23.44$ vs. 41.11 ; $t(52) = -8.82$, $p < .05$, $\eta_p^2 = .71$).

No differences were found for the remaining seven items, including, the targets' friendliness, their abruptness/curtness in responding, their level of comfort, interest or engagement in the interview, their number of speech errors or the number of social comments they made.

Participant's average body posture (circle one):

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- 8 ----- 9

Leaning away
from you

Sitting Straight up/
Trunk is upright

Leaning toward
you.

Appendix X: Judges' rating scales

Participant # _____ Judge # _____

Interview # _____ Set # _____

Student's (interviewee) name: _____

Please rate the behaviour of the participant (interviewer) toward the student. For ratings which cannot be objectively measured (i.e. timed or counted), we are simply interested in your *general* perception of the participant's behaviour towards the student. That is, there are no right or wrong answers to these questions.

Participant's:

Eye contact: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
None A lot

Abruptness/
Curtness: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all Very abrupt

Friendliness: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all friendly Very Friendly

Overall
comfort level: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all comfortable Very Comfortable

Overall level of
interest in the
interview exercise: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all interested Very interested

Overall level of
engagement in the
interview exercise: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all engaged Very Engaged

Participant's average body posture (circle one):

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- 8 ----- 9

Leaning away
from studentSitting Straight up/
Trunk is uprightLeaning toward
the student

Quantitative ratings

Total Time Participant Spent Speaking (above that of reading the questions)
_____ mins

_____ Number of times participant smiles during interview

_____ Number of times participant makes speech errors (e.g., stumbles over words)

_____ Number of speech hesitations, pauses, "umm", "hhmm" etc.

_____ Number of jokes or friendly, social comments the participant makes.

Appendix Y: Participants' rating scales of targets' behaviour

Student Interview Training 1.

Student's name: _____

The following questions are for you to rate the student's performance. Remember that there are no right or wrong answers, we are simply interested in your opinions. Please answer honestly as this is for the student's benefit. The students will be given feedback in a summarised form, that is, no individual ratings will be shown to the students. We remind you that all answers are anonymous and confidential.

How competent do you think the applicant would be in the Advisory position?

Poor 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 Excellent

If you were in charge of hiring, how likely is it that you would offer this student the position?

Not likely 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 Very likely

**Overall then, would you recommend the student for the Advisory position?
YES / NO****Please circle the appropriate number that represents your opinion of the student in general.**Clarity of answers: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not clear at all Very clearCompetence with answering questions: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not competent at all Very competentFriendliness: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all friendly Very friendlyStudent's overall interest towards the interview exercise: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all interested Very InterestedStudent's overall level of engagement in the interviewing exercise: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all engaged Very EngagedYOUR own comfort level: 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9
Not at all comfortable Very Comfortable

Please turn the page over.

What was good about the student's interviewee skills?

What could he/she improve?

We are always looking for ways to improve this exercise.

Are there any other comments you'd like to make about the people you interviewed or about the situation?

Thanks again for helping with this exercise!

Appendix Z: Study 3 Information Sheet

University of Canterbury

Department of Psychology

Information

You are invited to take part in a two part study, titled “Opinions about employees with different characteristics”. The aim of the study is to investigate individuals’ opinions about older and younger workers.

Your involvement in this study will include two parts; both sessions include some brief questionnaires and a computer task.

You have the right to withdraw from the study at any time, including withdrawal of any information provided. All data collected will remain confidential and anonymous.

The study will take approximately 20-30 minutes to complete (per session), and there is no perceived risk present. You will be given a \$5 gift voucher as a thank you for participating.

The results of the present study may be published, but you are assured of the complete confidentiality and anonymity. To ensure this, all data is collected anonymously and the data can only be accessed by the experimenter and her supervisors.

The present study is completed as part of PhD research by Sanna Malinen, supervised by Assoc Prof Lucy Johnston. Sanna will be happy to answer any questions you may have about the study, and can be reached via email on skm37@student.canterbury.ac.nz. Assoc Prof Johnston can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch.

The project has been reviewed and **approved** by the University of Canterbury Human Ethics Committee.

Appendix AA: Study 3, second Information Sheet

University of Canterbury

Department of Psychology

Information

You are invited to take part in a study called 'Pre-employment interview training for the Applied Psychology students'. The aim of this exercise is to give the graduating Applied Psychology students experience with pre-employment interviews.

Your involvement in this exercise will involve taking part in a mock interview situation with two Applied Psychology students. We will ask you to play the part of an interviewer for which questions will be provided, and for you to evaluate each student and give any feedback you may see as appropriate. This feedback will be given in a summarised and anonymous format to the students. We would also like to video-record the student during the interview for feedback purposes. Please let the experimenter know if you do not feel comfortable with this.

You have the right to withdraw from the study at any time, including withdrawal of any information provided. All data collected will remain confidential and anonymous. The study will take approximately 30 minutes to complete, and there is no perceived risk present. You will be given a \$10 gift voucher as a thank you for participating.

The results of the present study may be published, but you are assured of the complete confidentiality. To ensure this, all data is collected anonymously and the data can only be accessed by the researcher and her supervisors. The data will be held at the Social Perception Laboratories' secure storage for minimum of five years.

This exercise is being conducted by Gabriela Motoi under the supervision of Assoc Prof Lucy Johnston. Gabriela will be happy to answer any questions you may have about the study, and can be reached via email on gmo22@student.canterbury.ac.nz. Assoc Prof Johnston can be contacted at the Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch.

The project has been reviewed and **approved** by the University of Canterbury Human Ethics Committee.

Appendix AB: Class photographs



Appendix AC: Study 3, Debriefing Sheet

University of Canterbury
Psychology

Department of

Debriefing Sheet

Thank you for taking part in this study, which is completed as part of my PhD research.

The full title of the study is: “Implicit Attitudes: Their malleability and the influence on behaviour”. The study investigates whether people’s implicit attitudes, those attitudes which exist outside the individual’s awareness, can be altered and whether they influence behaviour.

Attitudes are the beliefs and feeling individuals hold about things. They can be classified into two types, namely, explicit and implicit attitudes. Explicit attitudes are those which people are aware of, and expressed when asked about. In contrast, implicit attitudes are feelings which individuals might not be fully aware of. Furthermore, recent research has found implicit attitudes to be malleable, that is, a change in the implicit attitudes can be observed after an experimental intervention. Research has yet to establish whether a change in people’s attitudes would also change their subsequent behaviour. The present study aims to investigate this question.

The specific attitude in question is the attitude towards older workers relative to younger workers. Older workers have been previously found to have negative stereotypes and prejudicial attitudes attached to them. Because of such negative attitudes, older workers may encounter discrimination and be disadvantaged in a number of situations, such as recruitment and selection procedures for employment. The present study aims at investigating whether such negative attitudes can be altered with an intervention, in order to reduce the occurrence of such prejudice and discrimination in the future. Further, it is investigated whether individual’s behaviour can be predicted from their attitudes. It is vital to note here that holding such biased attitudes is **very common** and **completely normal**.

The implicit attitudes are measured by a computerised Implicit Association Test (IAT). The IAT measures the participants’ attitudes towards the target group, that is, their evaluations of the group. The IAT recorded the response time for “congruent trials” (those in which the target category ‘older worker’ and ‘bad’ words had the same response key) and “incongruent trials” (those in which the target category ‘older worker’ and ‘good’ words had the same response key). The difference in these response times is used as a measure of attitudes – the more strongly one associates the target category ‘older worker’ with bad words the faster responses to the congruent than the incongruent trials are.

The explicit attitudes were measured with two different scales. The semantic differential scales asked you to rate on a bipolar scale to what extent you thought specific attributes were reflective of older and younger workers, and the feeling thermometer simply asked you to indicate your general feelings about older and younger workers on a scale from 0 to 100. Based on previous research, it is expected that most individuals would show slightly negative attitudes towards older workers as compared with younger workers, at least in most traits (e.g. productive, flexible). The present study has two conditions, the control group and an experimental group. In the second session, the experimental group participants were instructed to name three respected and valued older workers from their surroundings and to indicate why they consider these individuals to be valued and respected. It is expected that the participants would show less negative attitudes after such instructions due to the increased number of counter-stereotypical (i.e. positive) examples of older workers brought to mind. The control group also completed the IAT and the explicit attitude measures as the experimental group, but were asked to imagine three holiday destinations instead. It is expected that the experimental group will show less implicit bias towards older workers as compared with the control group.

Importantly, there were a number of factors in the second study that the participants' were not told about before completing the study. The ostensibly two different studies were in fact parts of the same study. The 'second' study was investigating the participant's behaviour towards the student. Note that the 'students' were actually confederates, hired to play a part of an employment seeking student. One student was always an older student and the other a younger student. The participant's behaviour towards the students was measured in a number of different ways, and specifically, we were interested in both controlled and more spontaneous (automatic) behaviours. The participant's ratings of the student (e.g. hireability) were used as a measure of a controlled behaviour. The student's ratings of the participant and the video-taped interaction will be investigated for the more spontaneous behaviours (e.g. smiling). This recording will be analysed by judges focusing on behaviours such as smiling and eye contact. It is expected that individuals in the experimental group would show more positive spontaneous behaviours towards the older student as compared with the younger student than the participants in the control group. No difference is expected in the participant's ratings of the student (the more controlled behaviour) as a function of the group.

It was important to disguise some factors from the participants, such as that the two studies were in fact part of the same study, the true identities of the students and the focus of the video-taping, in order to gather the information of interest. It is likely that being aware of, for example, being video-taped, would have led the participants behave in a slightly different way. That is, in this

study, the specific interest was towards spontaneous behaviours rather than behaviours occurring after deliberating.

Finally we also asked about your experiences in recruitment and selection practices. We are interested whether those individuals who have experience in recruitment practices reveal different attitudes to those individuals who do not have such experience.

All information collected will remain confidential, and the data will be securely stored at all times. For further questions, please contact Sanna Malinen on skm37@student.canterbury.ac.nz.

Appendix AD. The correlations between the judges' and targets' item level ratings and the attitudinal variables.

Table i. Item Level Correlations between the Judges' ratings of the Control Group Participants' Behaviour and the Attitudinal Variables.

	SD	FT	IAT
Eye contact	.20	.25	-.14
Friendliness	-.66*	.02	-.31
Comfort	-.33	-.19	-.63 ^a
Interest	-.34	-.34	-.27
Posture	-.13	-.35	.21

Note. SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers. $N = 14$.

* $p < .01$. ^a = correlations indicative of a large effect.

Table ii. Item Level Correlations between the Targets' ratings of the Control Group Participants' Behaviour and the Attitudinal Variables.

	SD	FT	IAT
Eye contact	.30	.36	-.30
Abruptness	.44	.34	.25
Friendliness	.66*	.03	.26
Comfort	.09	-.40	-.05
Interest	.41	-.29	-.03
Engagement	.63 ^a	-.32	.03
Own comfort	.28	-.15	.33
Posture	.24	-.22	-.02

Note. SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers. $N = 15$.

* $p < .01$. ^a = correlations indicative of a large effect.

Appendix AE. The correlations between the judges' and targets' item level ratings and the attitudinal variables.

Table i. Item Level Correlations between the Judges' ratings of the Experimental group Participants' Behaviour and the Attitudinal Variables

	SD	FT	IAT
Eye contact	.12	-.29	.15
Friendliness	.30	.10	.43
Comfort	.10	.14	.57 ^a
Interest	.28	.11	.20
Posture	.26	.23	-.28

Note. SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers. $N = 12$.

^a = correlations indicative of a large effect.

Table ii. Item Level Correlations between the Targets' ratings of the Experimental Group Participants' Behaviour and the Attitudinal Variables.

	SD	FT	IAT
Eye contact	-.18	-.27	.07
Abruptness	-.24	-.02	-.40
Friendliness	.11	-.20	.05
Comfort	.18	-.26	.54 ^a
Interest	.34	-.20	.20
Engagement	.22	-.28	.23
Own comfort	-.51 ^a	.01	.02
Posture	.57 ^a	-.18	-.16

Note. SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers. $N = 13$.

^a = correlations indicative of a large effect.

Appendix AF: The correlations between the participants' ratings of the targets and attitudinal variables.

Table i: Correlations between the Ratings by the Participants and the Attitudinal Variables and Motivation to Respond without Bias Scores for the Control and the Experimental Groups.

Measure	Control	Experimental
Semantic differentials	-.05	-.45
Feeling thermometers	-.10	-.19
IAT	-.32	-.28

Note. IAT = Implicit Association Test. Control group, $N = 15$; Experimental group, $N = 13$. The semantic differential and feeling thermometer responses are represented as difference scores, such that a higher number indicates a more positive evaluation of younger, relative to older, workers. The behavioural ratings are also represented as difference scores such that a positive number indicates a more positive evaluation of the younger, relative to the older target.

Table ii: Correlations between the Participants' Item Level Ratings of the Target and the Attitudinal Variables as a Function of Condition.

	Control			Experimental		
	SD	FT	IAT	SD	FT	IAT
Overall competence	.16	.01	-.23	-.19	-.09	.14
Offering the position	-.06	-.36	-.17	-.18	-.19	-.13
Clarity	-.22	.25	-.20	.19	.15	.14
Competence	-.18	.15	-.31	-.35	.04	-.09
Friendliness	.06	-.19	-.18	.01	.03	-.37
Interest	.02	.11	.18	-.70 ^a	-.04	-.34
Engagement	-.33	-.20	-.14	-.57 ^a	-.08	-.55 ^a
Own comfort	.30	-.12	-.12	-.44	-.64 ^a	-.21

Note. SD = Semantic differential scales; FT = Feeling thermometer scales; IAT = Implicit Association Test. The semantic differential and feeling thermometer responses are represented as difference scores, such that a positive number indicates a more positive evaluation of younger, relative to older, workers. $N = 15$ for the control group; $N = 13$ for the experimental group.

^a = correlation indicative of a large effect.

Appendix AG: Correlations between the Younger/Older Target's Ratings of the Participant and the Participant's Ratings of Younger/Older Target.

	Experimental group	Control group
Younger target	.15	.42
Older target	.24	.38